





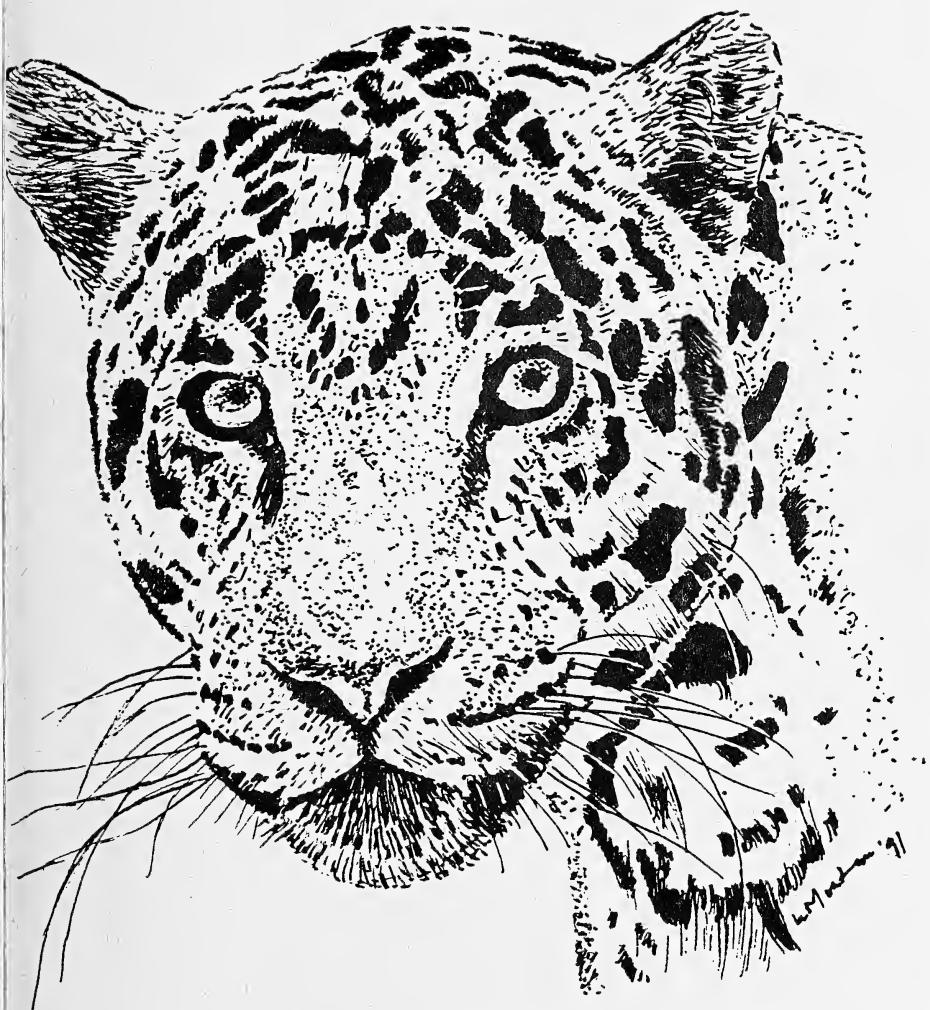




# Animal Keepers Forum

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July 1993



*Dedicated to Professional Animal Care*

ANIMAL KEEPERS' FORUM, 635 S.W. Gage Blvd., Topeka, KS 66606  
Phone: 1-800-242-4519 (U.S.) 1-800-468-1966 (Canada) FAX 913-273-1980

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**Associate Editors:** Kayla Grams & Gretchen Ziegler

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**Administrative Offices, 635 S.W. Gage Blvd., Topeka, KS 66606**  
**Barbara Manspeaker, Administrative Secretary**

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|   |  |
|---|--|
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|                                     |  |
|-------------------------------------|--|
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### AAZK PUBLICATIONS : CONTINUING DATA COLLECTION

Zoo Infant Development Project - Harmony Frazier-Taylor, Woodland Park Zoo  
Diet Notebook, Mammals, Vol. II - Susan Bunn Spencer, Bronx Zoo

## Table of Contents

|  |              |
|--|--------------|
| Scoops & Scuttlebutt (Election Results).....   | 226 - 227    |
| Message from the President (Yugoslavian Zoo).....  | 228          |
| Births & Hatchings/Red Siskin Hatch at Primarily Primates.....   | 229          |
| Coming Events/New Members.....   | 230 - 231    |
| AAZK Board Overseers: Who are they and what are their responsibilities?.....   | 232 - 233    |
| Information Please (red kangaroo, Bengal tiger and raptors).....   | 233          |
| Marine World to Host Elephant Conference/Chapter News.....   | 234          |
| Legislative Outlook.....   | 236          |
| Down Under (Abstracts from Australian Mammal Society Newsletter).....  | 237 - 239    |
| Expression of Interest in Keeper Exchange.....   | 239          |
| San Diego Zoo Opens New Exhibit: Pygmy Chimps at Bonobo Road.....  | 240 - 242    |
| Enrichment Options (Primate Feeders).....  | 243 - 244    |
| Elephant Set (Internal Diseases, Part I).....  | 245 - 248    |
| Letters to the Editor.....   | 248          |
| The Rainbow Garden.....  | 249 - 252    |
| Book Review (Concise Oxford Dictionary of Zoology).....  | 252          |
| Foraging Patterns of Semi-Free Ranging Long-tailed Macaques at Monkey Jungle.....  | 253 - 257    |
| Trib, SDWAP Gorilla Troop Patriarch Dies.....  | 258          |
| Remains of Gorilla Could Solve Mystery of Disappearance of Eminent Silverback Ziz.....   | 258 - 259    |
| Annual North American Symposium on Bat Research.....   | 259          |
| Opportunity Knocks.....  | 260          |
| Conference '93 Atlanta (Hotline Correction, Registration and Hotel Forms, Schedule...GOLD INSERT<br>Zoo Infant Development Project Reptile/Amphibian Data Sheet Guidelines<br>and Data Collection Forms..... | WHITE INSERT |

### Information for Contributors

Animal Keepers' Forum publishes original papers and news items of interest to the animal keeping profession. Non-members are welcome to submit articles for consideration.

Articles should be typed or hand-printed and double-spaced. All illustrations, graphs, charts and tables should be clearly marked, in final form, and should fit in a page size **no greater than** 15cm x 25 1/2cm ( 6" x 10"). Literature used should be cited in the text (Brown, 1986) and alphabetically in final bibliography. Avoid footnotes. Include scientific name of species (as per ISIS) the first time it is used. Thereafter use common name. Use metric system for weights and measurements (standard equivalents may be noted in parenthesis). Use the continental dating system (day-month-year). Times should be listed as per the 24-hour clock (0800, 1630 hrs. etc.) Black and white photos only are accepted. Color slides should be converted to black and white prints (minimum size 3 x 5 inch) before submission. Clearly marked captions should accompany photos. Please list photo credit.

Articles sent to Animal Keepers' Forum will be reviewed by the editorial staff for publication. Articles of a research or technical nature will be submitted to one or more of the zoo professionals who serve as referees for AKF. No commitment is made to the author, but an effort will be made to publish articles as soon as possible. Lengthy articles may be separated into monthly installments at the discretion of the editor. The editor reserves the right to edit material without consultation unless approval is requested in writing by the author. Materials submitted will not be returned unless accompanied by a stamped, self-addressed envelope. Telephone or FAX contributions of late-breaking news or last-minute insertions are accepted. However, long articles must be sent by U.S. mail. The phone number is (913) 272-5821 Ext. 31.

### DEADLINE FOR EACH EDITION IS THE 15TH OF THE PRECEDING MONTH

Articles printed do not necessarily reflect the opinions of the Animal Keepers' Forum editorial staff or the American Association of Zoo Keepers, Inc. Publication does not indicate endorsement by the Association.

Items in this publication may be reprinted providing credit to this publication is given and a copy of the reprinted material is forwarded to the editor. Reprints of material appearing in this journal may be ordered from the editor. Back issues are available for \$2.00 each.

*This month's cover art features the Jaguar (Panthera onca) drawn by Kiran Moktan, a sponsored foreign keeper from the Padmaja Naidu Himilayan Zoo in India. Kiran is sponsored by the Rocky Mountain AAZK Chapter at the Denver Zoo. His cover subject is found from the southern United States to northern Argentina where it inhabits forests, savannahs and lives a primarily nocturnal existence. These nonseasonal breeders have a gestation period of 93-110 days and produce a litter of 1-4 altricial cubs. An able climber and swimmer, the Jaguar is solitary and territorial. Like all the great spotted cats it is endangered due to hunting and habitat destruction. Thanks, Kiran!*

## **Scoops and Scuttlebutt**

### **NEC Chairman Announces 1993 Board of Director Election Results**

*-from Mike Light, NEC Chair*

I would like to take this opportunity to announce the results of the 1993 Board of Directors Election. Janet McCoy, Metro Washington Park Zoo (Portland, OR) and Alan Baker, Burnett Park Zoo (Syracuse, NY) have been elected to the AAZK Boards of Directors. Their four-year terms begin on 1 January 1994 and run through 31 December 1997. I would like to congratulate them and thank them for their willingness to serve and guide our Association.

I would also like to thank the other two candidates, Ric Urban, Houston Zoo (Houston, TX) and Nancy Biggins, Arizona-Sonora Desert Museum (Tucson, AZ) for their willingness to serve the Association. I would also like to thank the members of the NEC and Barbara and Susan at AO for all of their help with this election. There were a lot of changes that were made. This election could not have run as smoothly without their help and support.

### **4th Annual Preakness Clean-up a Success!**

*--submitted by Rosemary and Eric Krussman*

On Sunday, 16 May, 120 volunteers recruited from the National Aquarium in Baltimore, The National Zoological Park, and The Baltimore Zoo, performed the fourth annual clean-up and recycling of the "Preak Mess". After 90,000 horse race fans partied on the infield on Saturday, our clean-up crew was faced with a sea of debris which stretched the length of the 34-acre infield.

In total, we recycled 12,654 pounds of aluminum - 11,833 pounds of cans and 831 pounds of scrap from leftover lawn chairs! This year's project raised a total of \$8,600.00 (aluminum payment, cleaning contract, and Budwiser sponsorship) for the Ecosystem Survival Plan which has been earmarked for the purchase of land in the Talamanca Biological Corridor in Costa Rica. Congratulations to all who helped!

The Preakness Clean-up Project has also been awarded the Extraordinary Achievement Award by the Maryland Recyclers Coalition which presented the award on 13 May.

### **Metro Boston Chapter Shows Support for AAZK, Inc.**

The Board of Directors of AAZK, Inc. and the staff at the Administrative Offices wishes to thank the Metro Boston AAZK Chapter for their recent generous donation of \$125.00 to the Association. This donation roughly equates to the cost of all sizes of mailing envelopes used by AAZK, Inc. for a four-month period. The donation represents a percentage of the funds raised by the Metro Boston Chapter during a Golf-A-Thon fundraiser. Many thanks to the Chapter for their support.



### Houston Zoo/AZK Chapter Respond to Needs of Zaire Park Guards

The Houston Zoo Primate section, along with the Greater Houston Area AZK Chapter recently responded to the call for supplies for the park guards of the Eastern lowland gorillas (*Gorilla g. graueri*) found in the Maiko National Park in Zaire. After the notification of the problem through the Gorilla Gazette, which is put out by the Columbus Zoo, the project was started to collect needed supplies. The organization heading this project is the Bergorilla and Regewald Direkthilfe organization in Germany. They collect money and supplies and send them to Zaire for the park guards who do not even have adequate clothing. This organization not only focuses on this particular park, but also has helped in other situations.

Houston collected nine large boxes of clothing, jackets, shoes, camping equipment and blankets totaling 314 pounds. The costs of the cargo shipment was generously donated by Lufthansa Airlines. The cargo was sent to Dusseldorf and will eventually be sent to Zaire. All of the items were donated by Houston Zoo employees, docents, Zoological Society members, and other City of Houston employees. Anyone else wanting information on donating to this worthy cause may contact: Karl-Heinz Kohnen, Ripshorster STR. 365, D-4200 Oberhausen 1, Germany. Tel. 0202/306911 or 0202/206912; FAX D-202-312868. Feel free to contact Elyse Farrell, Primate Keeper, at the Houston Zoo for any inquiries on this project.

### AAZPA Task Force Seeks Assistance

The newly appointed AAZPA Exotic Game Ranch Task Force requests your help. As space and trained personnel become more limiting, the AAZPA must investigate cooperative propagation programs with qualified, conservation-oriented ranchers. In an effort to communicate with personnel from ranch families, we'd like to establish a list of facility names, addresses, and owner/operator contact people. Please help by sending information about facilities you know of or have dealt with (good or bad) to: J. Stephen McCusker, Chairman, Exotic Game Ranch Task Force, Reid Park Zoo, 1100 S. Randolph Way, Tucson, AZ 85715.



### **In Memory of Dick Schubot - 1927 - 1993**

A memorial was held on 18 May at Parrot Jungle in Miami for Dick Schubot, who died 15 May at age 66 after an extended illness. Schubot was co-owner of Parrot Jungle and in 1981 founded the Avicultural Breeding and Research Center (ABRC) which is located at the 40-acre facility. Schubot had what many bird experts considered the most extensive private collection of cockatoos and macaws in the world. A very successful McDonalds franchiser - at one time owning 18 in Palm Beach County - he committed his personal efforts towards protecting endangered exotic birds. For instance, his center has successfully hand-raised more very rare black palm cockatoos than any other breeding facility in the world. In 1986, he established and funded the Dick Schubot Exotic Bird Health Center at Texas A & M University. In 1988, Schubot wanted to help the financially strapped Parrot Jungle and, with Dr. Bern Levine, arranged a buy-out. He said that he wanted to ensure that others could continue to enjoy the 50-year-old attraction where hundreds of brightly colored parrots, cockatoos and macaws live in their natural habitat. Schubot's daughter, Shari, said the ABRC would continue its comprehensive bird breeding research programs with her brother Scott in charge of operations.

## Message From the President.....

As informed professionals, we should all be aware of the continuing crisis in Yugoslavia. The fighting is not only affecting thousands of innocent lives, it is also taking its toll on the respected zoos of Yugoslavia and surrounding republics.

AAZK has been contacted by Ignacije Tonkovic, Director of the Palic Zoo in Belgrade, Yugoslavia, for any assistance that we may provide. I would like to quote his letter:

"We are not being bombed, yet. But we don't have enough food, medication and petrol. I can't fight for high standards. I'm now fighting for the survival of my zoo. You might ask me: Is there any sense in fighting for the zoo, while the towns are being destroyed, while thousands of people are suffering? My answer would be that the animals are not responsible for this war, but I'm responsible for them."

We have also received a letter of support from the U.S. Embassy in Belgrade, which references past conditions at the zoo as a "well tended enterprise" and points to the "excellent condition of the animals".

If you or your Chapter wishes to offer help to the Palic Zoo, I urge you to contact Mr. Tonkovic directly with your offer at the following address:

Mr. Ignacije Tonkovic, Veterinarian  
Zoo, Krfska 4,  
24413 Palic, Vojvodina-Yugoslavia

Telephone 38-24-753-075  
FAX 38-24-753-303

Copies of the request letter and the support letter are available. Please contact me directly.



Ed Hansen, AAZK President  
Reid Park Zoo  
1100 S. Randolph Way  
Tucson, AZ 85716



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## China to Spend \$75 Million on Panda Protection

It was reported out of Beijing that China plans to spend \$75 million during the next decade in an effort to protect the Giant panda (*Ailuropoda melanoleuca*) from extinction. Much of this money is slated to be spent relocating humans away from panda habitat. The project includes the establishment of 14 new panda reserves in the species's natural habitat in southwest China's Sichuan, Gansu and Shaanxi provinces, and the building of corridors to link these new reserves with 13 already existing reserves. When the project is concluded there will actually be only seven or eight large protected areas which are divided into approximately 27 preserves.

# Births & Hatchings



The Lube Foundation (Gainesville, FL)....announces the following significant births at our institution:

**Mammals** - 2.1 Golden-mantled flying foxes (*Pteropus pumilus*) [CITES II, U] [first known recorded birth in N. America]; 5.0 Rodrigues Island flying fox (*Pteropus rodricensis*) [E/SSP]; 17 total (this season) Island flying foxes (*Pteropus hypomelanus*) [CITES II/U]; 1.3 Giant flying fox (*Pteropus vampyrus*) [CITES II/U]; 0.0.2 Black tufted-eared marmoset (*Callithrix kuhli*) [U]. *submitted by Keith Atkinson, Curator of the Chiroptera Dept., The Lube Foundation, Inc.*

**Little Rock Zoological Garden (Little Rock, AR)**....reports the birth of 1.3 Maned wolves (*Chrysocyon brachyurus*) [E] on 2-24-93 (0.1 DNS) - first time birth for the institution. *submitted by David Alexander, V.P. Little Rock AAZK Chapter.*

## Primarily Primates, Inc. Hatches Red Siskins

This early spring, five Red Siskin (*Carduelis cucullata*) chicks hatched at Primarily Primates, Inc. in San Antonio, TX from eggs so small and delicate that it is possible to lay three eggs across the face of a nickel. The first year is often tenuous for hatchlings and at best it will be an uphill battle for survival for these fragile, endangered chicks.

Prior to arrival at Primarily Primates this past August, the three breeding pairs of Siskins that hatched these chicks had not produced any offspring during the previous two years. The success of this first hatch is attributed to adhering to specific, stringent diet demands as well as paying constant attention to their needs. There are many challenges to raising captive-bred Red Siskins. These challenges are compounded by the fact that the lifespan of these birds in captivity averages only two to five years.

Extra moral support came to the Red Siskin Project in the form of corporate sponsorships from Kellogg Inc. Seed and Supplies which provided specialized diets, and from Spray Millet America which provided millet seed branches. These companies have agreed to sponsor portions of the Red Siskin's food for this vital project.

The Venezuelan Red Siskin population is on the brink of extinction with less than 500 remaining in the wild. Their massive population decrease is due primarily to extensive capture for the pet trade. Although now protected and on the Endangered Species List, the fight to save this species could be lost completely before the turn of the century without this project. A ray of hope is being seen through the collective efforts of concerned qualified aviculturists, such as Primarily Primates. Through the Red Siskin Project, the captive-bred population and the efforts to save them are being organized by the American Federation of Aviculture. The goal of this project is to maintain a genetically diverse population of captive-bred Red Siskins to eventually produce enough birds for a release program to repopulate their native habitat.

Primarily Primates, Inc., a non-profit 501(c)(3) charity animal sanctuary, is supported by members' tax deductible donations. A dedicated staff of only seven people work rigorously to meet the needs of over 500 animals and office management responsibilities. If you would like more information on Primarily Primates or on the Red Siskin Project you may call (210) 755-4616 or write Primarily Primates, Inc. P.O. Box 15306, San Antonio, TX 78212-8506. Donations may be sent to this address as well.



# Coming Events

## American Federation of Aviculture 1993 Red Siskin Summit

August 20-22, 1993

Kansas City, MO

Will include speakers as well as group discussion sessions on breeding the Red Siskin. These finches are being bred through the Red Siskin Project for eventual release in South America. Registration is \$20 and includes a catered lunch and 1993 Siskin Summit shirt. To register or for further information contact: Red Siskin Summit, c/o Yvonne Patterson, 4630 Blue Ridge Blvd., Kansas City, MO 64133 (816) 353-9964.

## 11th Annual Association of Zoo Veterinary Technicians Conference

Oct. 5-9, 1993

St. Louis, MO

To be held at the St. Louis Zoological Gardens. For more information contact: Barbara Jenness, St. Louis Zoo, One Government Dr., St. Louis, MO 63110 (314) 781-0900 or Virginia Crossett, Louisville Zoo, P.O. Box 37250, Louisville, KY 40233 (502) 459-2181.

## 1993 Annual Meeting of the American Association of Zoo Veterinarians

October 10-15, 1993

St. Louis, MO

Special sessions will include government regulations, zoo veterinarian's role in conservation programs, medicine of Australasian species, and group medicine and herd health. Other program sections will include pathology, parasitology, clinical pathology; reproductive technology and contraception, immobilization, anesthesia and monitoring; case reports, exotic pets and practice tips, reptiles and amphibians; primates, carnivores and small mammals; avianspecies; and aquatic animals. Scheduled workshops include comprehensive pest control programs, occupational health and safety, endoscopy, ophthalmology, and basic zoo animal medicine. Individuals interested in submitting a manuscript should contact Donald Janssen, DVM, San Diego Zoo, P.O. Box 551, San Diego, CA 92112 - Phone (619) 557-3933; FAX (619) 557-3959. For other conference information contact Wilbur Amand, DVM, AAZV Executive Director, 3400 Girard Ave., Philadelphia, PA 19104-1196; phone (215) 387-9094; FAX (215) 387-8733.

## The 16th Annual IWRC Conference

October 14-17, 1993

Lake Tahoe, NV

Theme: Wildlife Rehabilitation: A Perpetual Learning Process. Will include Skills Seminars on Basic Wildlife Rehabilitation IAB and an Advanced Skills Seminar on Gross Pathology & Clinical Pathology. Also includes a field trip to Lake Mono and a day trip to Virginia City. Paper topics will cover administration/education, avian, mammals, reptiles and veterinary medicine. There will also be hand-on workshops on such topics as making raptor hoods and basic necropsies, and round table discussion groups. For more information contact IWRC at (707) 864-1761 M-F 9 a.m.-4 p.m.

## International Marine Animal Trainers Association 21st Annual Conference

November 7-12, 1993

Kailua-Kona, HI

Hosted by Dolphin Quest and headquartered at the King Kamehameha Hotel on the big island of Hawaii. IMATA has issued its FIRST CALL FOR PAPERS in three categories: formal presentations, poster presentations and discussion groups. Abstracts must be submitted by 15 August 1993. For further information contact Julie Scardina-Ludwig, 1st Vice Pres., c/o Sea World of California, 1720 S. Shores Road, San Diego, CA 92109.

## Coming Events, *Continued*

### International Conference on Orang-utans: The Neglected Ape

March 5-8, 1994

Fullerton, CA

An International Conference on Orang-utans: The Neglected Ape will be co-hosted by the California State University, Fullerton; the Zoological Society of San Diego; and the Atlanta/Fulton County Zoo Inc. Paper and poster presentations are scheduled for 5-7 March, in Fullerton, CA, followed by a post-conference trip to the San Diego Zoo on 8 March, with attendees participating in workshops and tours. For registration information and abstract guidelines, please contact: Norm Rosen, Dept. of Anthropology, California State University, Fullerton, CA 92634-9480, FAX: 310-798-0576.

### 1994 AAZPA Regional Conferences

**6-8 March 1994** - Central Regional Conference. For more information, contact Donna Chain, Oklahoma City Zoo, 2101 N.W. 50th St., Oklahoma City, OK 73111 (405) 424-3344.

**20-22 March 1994** - Southern Regional Conference. For more information, contact Beverly Rutland, Montgomery Zoo, P.O. Box ZEBRA, Montgomery, AL 36109 (205) 240-4900.

**10-12 April 1994** - Western Regional Conference. For more information, contact Jean Miller, Micke Grove Zoo, 11793 North Micke Grove Road, Lodi, CA 95240 (209) 953-8840.

**17-19 April 1994** - Great Lakes Regional Conference. For more information, contact Carol Pedersen, Blank Park Zoo, 7401 S.W. 9th St., Des Moines, IA 50315 (515) 285-4722.

**1-3 May 1994** - Northeastern Regional Conference. For more information, contact Troy Stump, ZOOAMERICA, North American Wildlife Park, 100 West Hersheypark Dr., Hershey, PA 17033 (717) 534-3862.



## **AAZK Announces New Professional/Contributing Members**

|   |   |
|---|---|
| Temie Mense, National Zool. Prk. (DC)     | April Yoder, Paramount's Kings Dominion (VA)  |
| Nelia Lake-Stephens, Predators Plus (FL)  | Dawn Safranek, Lowry Park Zoo (FL)            |
| Charlene Nixon, Busch Gardens (FL)        | Kelly Dwyer, Lowry Park Zoo (FL)              |
| Christine Schleh, Busch Gardens (FL)      | Sara Bratcher, Nashville Zoo (TN)             |
| Laura Streeter, Milwaukee County Zoo (WI) | Alisa Sandor, Cleveland Metroparks Zoo (OH)   |
| Cindy Swanson, St. Paul's Como Zoo (MN)   | Elizabeth Borst, Brookfield Zoo (IL)          |
| Thom Barrows, Ft. Worth Zoo (TX)          | Mandy Hokett, Ft. Worth Zoo (TX)              |
| Twila Rhine, Ft. Worth Zoo (TX)           | John B. Wise, Ft. Worth Zoo (TX)              |
| Anita F. Jones, Ft. Worth Zoo (TX)        | Rudolph Jara, Ft. Worth Zoo (TX)              |
| Linda Roberts, Ft. Worth Zoo (TX)         | Tracy Thompson, Ft. Worth Zoo (TX)            |
| Shelly Coop, Ft. Worth Zoo (TX)           | Ellen Lancaster, Ft. Worth Zoo (TX)           |
| Richard Ward, Ft. Worth Zoo (TX)          | Josef Lindholm, Ft. Worth Zoo (TX)            |
| John S. Leggett, Ft. Worth Zoo (TX)       | Chris Davis, Ft. Worth Zoo (TX)               |
| Linda Tipps, Ft. Worth Zoo (TX)           | Joni Anthony, Ft. Worth Zoo (TX)              |
| Rogann Wood, Ft. Worth Zoo (TX)           | Lynn Daniell, Ft. Worth Zoo (TX)              |
| Sherryl Webb, Ft. Worth Zoo (TX)          | Rick Tucker, Ft. Worth Zoo (TX)               |
| Hope Bellino, Ft. Worth Zoo (TX)          | Harve T.D. Weedn, Ft. Worth Zoo (TX)          |
| Lisa Lynne Weedn, Ft. Worth Zoo (TX)      | Steve Tirotta, Santa Barbara Zool. Gdns. (CA) |
| Timothy Davis, Magnetic Hill Zoo (NB)     | Catherine Oliarnyk, African Lion Safari (ONT) |
|   | Kristine Colborne, Jungle Cat World (ONT)     |

### **New Contributing Members**

Detroit Zoological Park, Royal Oak, Michigan

### **Renewing Contributing Members**

Andy Lodge, Ngare Sergoi Support Group, Inc., Columbus, Ohio



# AAZK Board Overseers: Who are they and what are their responsibilities?

This is the third in a monthly overview of the responsibilities of each member of the AAZK Board of Directors. Each Board Member is assigned committees and/or projects to coordinate or oversee. These oversights are managed on the basis of professional communication with the Board Overseer, a direction of goals by the Overseer/Board, and the collaborative efforts of committees, chairs and the membership.

The Overseer also coordinates mid-year and annual reports to the Board for consideration of budget needs, appointees, resignations and accounting of activities for report to the membership. The Overseer is essentially the manager of the projects/committees assigned to him/her and sees to the best interest of the AAZK.

This month we'll review the responsibilities of Board Member and AAZK Vice President Janet McCoy, Metro Washington Park Zoo, Portland, OR.

## Conferences

Zoo Atlanta, Atlanta, GA, October 10-14, 1993

Co-Chairs: Ellen Bradfield, Charles Horton and Brian Russell

Henry Doorly Zoo, Omaha, NE, October 9-13, 1994

Co-Chairs: Diane Callaway and Lisa Cuevas

Denver Zoological Gardens, Denver, CO, September 24-28, 1995

Chair: G. Suzanne Chacon

The Board is seeking a Chapter that would like to host the 1996 Conference. Conferences are one of the most effective ways that our Association can communicate and exchange information, knowledge and expertise concerning our profession. The AAZK Annual Meeting is usually held on the last day of the conference. Board and committees also meet during this time. The Conference Handbook can serve as a "how-to" guide toward hosting a successful conference and is available from Administrative Offices for \$15.00. If the requestor then hosts a conference, the fee is refunded.

A well-run conference can be a money-maker for the host Chapter. In the past, the net profit was split 50/50 between the Chapter and the Association. As of the San Diego Conference, a set portion of the registration fee per delegate is designated for the Association and the host Chapter retains the rest. If an auction is held and the conference makes a profit, one third of the auction proceeds comes to AAZK, Inc. with two-thirds remaining with the Chapter. The funds received by the AAZK Administrative Offices are used to augment the budget.

Bids should include a letter of intent to host an AAZK, Inc. National Conference from the Chapter's President. Support letters of approval from the Zoo's Director as well as other relevant persons or agencies (i.e. Zoological Society, City Council, Convention Bureau, etc.) should also be included. The original letters should be sent to AAZK, Inc. Vice President Janet McCoy, who is the Board oversight for conferences.

Chapters with Board-approved bids shall make a formal presentation at the 1993 National Conference in Atlanta. At that time, the AAZK delegates will vote on submitted bids for the site of the 1996 National Conference.

## Historian

Position: VACANT

An AAZK History Committee has been in existence since 1979. The Historian collects archival data on the chronological events of the American Association of Zoo Keepers, Inc. This includes an annual summary of the activities, committees, projects, services, events, Board, Chapters and membership which are deemed meaningful to the history of the Association. The Historian would act in the capacity of an advisor in matters of historical importance. In 1992, Rachel Rogers, as Historian, published the first AAZK History Book covering the first twenty-five years. This publication is available from AO. The next book should be published in 2002.



## Board Oversights, Continued

The position requires good reporting and record keeping skills, a desire to maintain AAZK's history, and ability to advise the membership concerning historical information. If you are interested in this position, please contact Janet McCoy, Vice President.

## Research/Grants

Chair: Susan Barnard, Zoo Atlanta

The formation of this committee occurred at the 1980 Montgomery National Conference. Four \$200.00 annual grants were made available. This has been changed over the years to two \$750.00 annual grants. This year a grant was awarded to Elizabeth Ann Pyle for her research project on "Non-invasive Hormonal Characterization of the Estrous Cycle and Pregnancy in Tapir - *Tapirus indicus* and *Tapirus terrestris*."

The deadline for grant application is March 1st of each year. The Board then reviews applications and votes on funding for the coming year at the Mid-year Board Meeting. If you are interested in applying for funding next year, please contact Susan Barnard, Chair, for the appropriate forms and further information.

## Video Tape Project

Status: On Hold

Coordinator: VACANT

The Video Tape Project exists to encourage production of keeper training videotapes for use in zoo keeper training. Such tapes may be produced by Chapters, zoos or individuals and funding assistance is available through the project. Two tapes are currently being distributed through the AAZK Administrative Offices. They are: "Keeper Safety: An Attitude Adjustment", and "An Introduction to Feeds and Feeding".

Currently the Coordinator position is being revamped and will be given to the Board for its review at the Atlanta Conference.

## Ad Hoc Ethics Committee

Chair: Oliver Claffey, Past President

The Board of Directors implemented the committee in 1992 to deal with ethical issues of its membership. This was not done to police members, but rather to protect the membership from any individual's actions which might jeopardize the Association's tax-exempt status or use AAZK to further their own ends. The committee is chaired by the Immediate Past President and committee members are chosen at random and asked to serve a term of two years. The committee is only activated if a problem arises.



## Information Please

Denver Zoo is seeking information concerning Red Kangaroo (*Megaleia rufa*), in particular pertaining to "lumpy jaw". Please send any dietary, husbandry or preventative measures information to: Linelle Lone, Denver Zoo, 2900 E. 23rd Ave., Denver, CO 80205.

I would like to receive information about raising a baby Bengal tiger (*Panthera t. tigris*) from birth through adulthood. I need information on all aspects including feeding times, diet (type of food and schedule), preventive care, handling, maintenance, training, shots, vitamins, how to recognize diseases, and medication for treatment. Send information to: Mark Lehman, 1983 Universal Ave., San Bernardino, CA 92407 (909) 887-3823.

Want to exchange information pertaining to the breeding, housing, training and care of raptors. Intern education materials also desired. Please contact Springbrook Nature Center, 130 Forest Avenue, Itasca, IL 60143, Attn: Bill Wiczorek. Tel: (708) 773-5572; FAX - 708-773-2505.



# Marine World to Host Annual Elephant Conference



MARINE WORLD AFRICA USA

The 14th annual meeting of the Elephant Managers Association will be hosted by Marine World Africa USA in Vallejo, CA from 16-19 October 1993.

Marine World maintains 11 Asian and African elephants in a total hands-on situation. Elephant rides, circus-type shows, traditional log pulling/stacking demonstrations, soccer and ball kicking games, painting, educational talks and petting/feeding the animals are everyday occurrences in Elephant Encounter, a 2.2 acre area devoted to telling people everything they want to know about elephants.

We are hoping for a diverse set of presentations which would shed light on the recent changes in philosophy regarding captive elephant management. Hands-on, hands-off and protected contact are all possibilities given an organization's existing needs and future necessities. Additionally, a full day will be spent at the Park viewing what we do with our animal collection to "educate through entertaining" almost 2 million visitors per year.

For further information contact:

Land Animal Department (Polly Gusa)  
Marine World Africa USA  
Marine World Parkway  
Vallejo, CA 94589  
(707) 644-4000 Ex. 212



## Chapter News

### Tucson Chapter AAZK

In October we had a swap meet to raise money to buy acreage in La Amistad, Costa Rica. We raised \$200.00. We also bought the Arizona-Sonora Desert Museum and Reid Park zoo each a copy of Biological Values for Selected Mammals.

In December we decorated a tree for Reid Park Zoo's "Festival of Lights" Christmas Event.

In January we elected new officers. The are:

President.....Rusty Agte  
Vice Pres.....Michelle Acuna  
Secretary.....Kim Smith  
Treasurer.....Dee Nelson  
Chapter Liaison.....Nancy Biggins

We decided to use a point system to encourage Chapter involvement: if a member reaches 10 points per year, our Chapter will pay their national dues.

In March we met at Ed Hansen's house where he cooked a fabulous meal for us. Richard Block, Executive Director of the Dian Fossey Gorilla Fund, spoke to us telling us about the plight of the Fund and the research station and the new goals they have.

In early April we had a guest speaker, Yar Petryszyn, curator of the mammal collection at the University of Arizona. He spoke on the "Causes and Effects of El Nino". We had a raffle and raised \$70.00.

At the end of April we had a potluck and auction to raise money for El Centro Ecologico de Sonora, Hermosillo, Sonora, Mexico. Michelle Acuna visited ASDM's sister institution and gave a slide presentation to the Chapter in February. We asked them to make a 'wish list' of supplies they needed and we will probably be able to get everything for them with the \$1110.00 we raised!

--submitted by Michelle Acuna  
and Kim Smith





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*Marmoset/Tamarin dry*                    *Ratite dry*  
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*P.O. Box 721*  
*North Platte, NE 69101-0721*

# Legislative Outlook

Compiled by  
Phyllis Nilson-Wojcik  
Legislative Advisor



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## Louisianan Seeks Permit to Import Horns of Darded Black Rhino

A Louisiana hunter, John J. Jackson III of Metairie, applied to the U.S. Fish and Wildlife Service in January for a permit to import both horns to be removed from a sedated black rhinoceros (*Diceros bicornis*). Jackson proposed to dart the rhino and have a qualified individual remove the horns. He requested that the two horns be considered sport-hunted trophies and stated that the proposed import would enhance the survival of the species in the wild.

No decision has been made to date. A spokesman for the U.S. Wildlife agency said they are currently awaiting additional information from Zimbabwean wildlife officials. A variety of views on the permit application have been expressed during the 30-day comment period.

### Opposing the Application:

NYZS The Wildlife Conservation Society: "Since at the present time, the conservation benefit of dehorning is unsubstantiated, we urge you to not approve the permit application to import the horns of a black rhino that have been removed from a dehorning operation. We are...concerned about the precedent set by allowing the importation of an endangered species hunting trophy. To date, the importation of hunting trophies of species listed as endangered under the Endangered Species Act has not been permitted. The bontebok is the exception, but trophies are permitted only from ranches. If the U.S. condones the import of rhino horn from darting safaris, it will erode its position in applying pressure on consumer nations to stop the rhino trade. Any legal route for trading horn will at the present time make it extremely difficult to stop the illegal trade."

Friends of Animals: "Suppose the U.S. did allow the applicant to import his trophy. Could the U.S. then object to the citizen of another nation importing a similar trophy to this country? Even if the importer was an employee of a Taiwanese, Chinese or South Korean traditional pharmaceutical company? Is there not a risk that such dehorning safaris could very quickly become a loophole through which trade in rhinoceros horn is conducted?"

### Supporting the Application:

Safari Club International: "...It is SCI's stance that the benefits of darting safaris must be an aspect in the overall conservation plan,...Without the revenue provided by these safaris and other techniques, the black rhino is doomed. The safaris would provide 1) needed funding for the wildlife agency including game rangers; 2) an economic incentive to the local people to become involved in the survival of the renewable natural resource; and 3) heighten the awareness of the plight of the rhino. It has worked for the white rhino."

TRAFFIC East/South African Office: "The development of a darting/dehorning safari protocol which provides adequate safeguards to ensure rhino protection during execution of the operation and specifically allows for such revenues to be rechanneled directly back into rhino conservation could greatly assist authorities in meeting the high costs of rhino dehorning. Precise details remain to be seen, however, on how Zimbabwe would incorporate dehorning safaris into their overall conservation plan, specifically how and on what scale such safaris would be carried out, and how revenue generated would be channelled into dehorning activities and possibly into other non-commercial import of black rhino horn appear quite low, TRAFFIC would conditionally endorse black rhino darting/dehorning safaris..., provided the questions outlined above are satisfactorily answered." >*African Wildlife Update May-June 1993, Vol., 2, No. 3*





# DOWN UNDER

By  
Judie Steenberg, Keeper  
Woodland Park Zoo  
Seattle, WA

DOWN UNDER.....is an information column about Australasian animals. While there are a number of Keepers who work in Australasian Units, or routines, oft times a Keeper will have a few species

of animals from the Australasian zoogeographical region on their string or routine. It is hoped this section will contain information on birds, mammals and reptiles.

This column is intended to:

- share experiences and information to improve the care and management of Australasian animals.
- seek information and advice on problems that occur.
- serve as a forum through which to make comment, to ask questions, to critique, or to verify information.

Please send your materials (a question, a paragraph or an article) directly to *Animal Keepers' Forum*, Topeka Zoological Park, 635 S.W. Gage Blvd., Topeka, KS 66606-2066, Attn: Susan Chan.

## Abstracts from the Summer '92 Australian Mammal Society Newsletter

(for further information on the topics covered, please contact the author(s) at the addresses given with the abstracts)

### Reproductive Success in Female Euros in Semi-Arid New South Wales

D. Ashworth, University of New South Wales, Anzac Parade, Kensington, NSW.

Thirty-five radiocollared and approximately 125 uniquely tagged female Euros (*Macropus robustus erubescens*) were observed over a four-year period in North-Western N.S.W. During this period environmental conditions were very good during the first three years and approached drought during the fourth. Aspects of breeding, including pouch duration, rate of rearing young, mortality of young and the age that the young leaves the mother were compared to the sex and survivorship of the previous young, the sex of the current young, the age and condition of the mother and the condition of the environment as it approached drought.

Results showed that maternal investment is distributed differently between male and female young and that the costs associated with producing male and female young are different. Evidence that females may be adjusting the sex of their offspring to maximize their own ultimate reproductive success was also obtained by comparing changes in population pouch young sex ratios with the environment and by comparing the condition of the mother and the environment at conception with the sex of the subsequent young.

## Down Under, Continued

### Effect of Fire on Populations of the Tasmanian Bettong

C.N. Johnson, Dept. of Zoology, University of Tasmania, GPO Box 252C, Hobart Tas. 7001

The Tasmanian bettong (*Bettongia cuniculus*) feeds on the sporocarps of hypogeous fungi. Such sporocarps are available at all times of the year, but their fruiting is markedly promoted by fire. In one field experiment, sporocarp production increased five-fold one week after a fire. Bettongs feed preferentially on burnt ground. A broad-scale experimental burn was conducted to test the effect of fire on a bettong population. No animals were killed by the fire, and population density on the site increased almost immediately as a result of immigration (mostly by males). The increase in fruiting of fungi was associated with a rapid improvement in body condition of all animals in the experimental population. Preliminary data indicate that growth rates of pouch young also increased on the burnt site, presumably because females were able to increase the quality or total production of milk.

### Effects of water restriction on digestive function in two macropod marsupials from divergent habitats and the feral goat

David O. Fruedenberger<sup>1</sup> and Ian D. Hume<sup>2</sup>, University of New England

Present Addresses: <sup>1</sup>CSIRO Division of Wildlife and Ecology, PO Box 84,  
Lyneham, ACT 2602

<sup>2</sup>School of Biological Sciences AO8, University of Sydney, NSW, 2006

The effects of water restriction on digestive function in the euro (*Macropus robustus erubescens*), the eastern wallaroo (*M. r. robustus*), and the feral goat (8 of each spp) were compared in order to examine some physiological adaptations required by herbivores for the exploitation of arid environments.

Four of each species were restricted to 40 ml water/kg<sup>0.80</sup>/d, the others were given water *ad libitum*. This restricted intake was 40%, 32% and 57% of voluntary drinking water intake in the euro, wallaroo and goat respectively.

The euro displayed a suite of characteristics that separated it from the wallaroo in terms of physiological adaptation, including lower voluntary water intake, an increase in fibre digestibility and maintenance of nitrogen balance during water restriction, and lower fecal water efflux associated with a consistently lower fecal water content (54% vs 59% water in the euro and wallaroo during water restriction,  $P < 0.05$ ). The euro's colon was 37% longer ( $P < 0.01$ ) than that of the wallaroo. The goat had the lowest fecal water efflux ( $P < 0.05$ ) and the longest colon ( $P < 0.001$ ). Water restriction did not effect water content in digesta, nor short-chain fatty acid concentrations or production rates *in vitro*. Total body water, as a proportion of body mass, was depressed ( $P < 0.05$ ) in the macropods, but not in the goat. The reduction in dietary nitrogen intake, which accompanied water restriction, was partially compensated by an increase in urea degradation in the gut from 68% to 76% of urea synthesis into the plasma of water-restricted macropods.

### A Study of the Reproductive Physiology of Long Footed Potoroos (*Potorous longipes*) in Captivity R. Booth<sup>1</sup>, M. Halley<sup>1</sup>, M. Renfree<sup>2</sup>, T. Fletcher<sup>3</sup>

<sup>1</sup>Healesville Sanctuary, P.O. Box 248, Healesville, Vic. 3777, Australia

<sup>2</sup>Melbourne University Zoology Dept., Grattan St., Parkville, Vic., Australia 3052

<sup>3</sup>Prince Henry Institute for Medicine, P.O.Box 152, Clayton, Victoria, Australia 3168

Long footed potoroos (*Potorous longipes*) were only discovered in 1967, and their status in the wild is still uncertain. A captive colony at Healesville Sanctuary has been maintained since 1980 from four animals trapped in 1978. In 1990 a study of their reproductive physiology was begun in an effort to improve their reproductive success in captivity and provide baseline information on the species. Information on oestrus cycles, gestation length, weaning age, and age at puberty have been collected from two breeding seasons and breeding success has been increased by improved management.



## **DOWN UNDER.** *Continued*

### **Potoroo Workshop**

Arthur Rylah Institute/30 October 1991  
P.O. Box 137, Heidelberg, Victoria, Australia

This workshop was convened to examine the state of knowledge about potoroos and to develop some directions for the future management of the two extant species. The Long-nosed potoroo (*Potorous tridactylus*) is present in Tasmania, Victoria, New South Wales and Queensland. It is considered to be extinct in South Australia and Western Australia. The Long-footed potoroo, (*P. longipes*) is only found in Victoria and New South Wales.

*P. tridactylus* is generally regarded as of secure status in Tasmania and Victoria, but the situation in the other parts of its range is less certain. Although previous studies have provided the basis for conservation management, many aspects of the species' biology remain unknown. No specific management plans have been prepared for this species in any State, although it is included in general plans for specified conservation reserves.

*P. longipes* is extremely restricted in its distribution, occurring only in far east Gippsland in Victoria and a small area in southwestern New South Wales. Its status in both States is effectively unknown. Limited studies have enabled the preparation of interim management strategies, but they have yet to be ratified or tested in the field.

Thus, this workshop set out to review the state of knowledge in certain areas of potoroo biology, and to suggest in which the identified gaps might begin to be addressed. The workshop was divided into 8 topics, introduced by selected participants who then facilitated the discussion which followed.

A 7-page report on this workshop, including list of participants is available from John Seebeck, Arthur Rylah Institute.



## **Expression of Interest in Keeper Exchange**

Keeper Exchange to Perth Zoological Gardens, Western Australia.

Duration 6 - 12 months

Commencement Date Flexible - January 1994 approximate

Accommodation can be arranged at a reasonable rate for exchange keeper.

I hold a position of senior specialist keeper and acting section keeper of the Australian native mammal department. Am seeking exchange with North American keeper/facility. Am involved in the captive breeding management of Koalas; endangered species breeding programs for Numbats and Western native cats. Facility has macropods and a small reptile collection. An Endangered Species Center is currently being developed 40 minutes from Perth Zoo and is scheduled to begin operation sometime in 1994. Some field work may be available on a voluntary basis with the Department of Conservation and Land Management due to the endangered species programs the Department cooperatively manages with the zoo.

I have 13 years experience working in zoos and have completed multiskilled training in animal health department, and with primates, birds, Australian mammals and reptiles.

Perth City has comparable weather to San Diego. Summer 19-37° C - Winter 7-20° C.

Please contact Vicki Power (18B King Albert St., Trigg 6029, Western Australia) ASAP if interested in the exchange or to acquire additional information. Home phone: 00 11 61 09 - 4488435. Perth Zoo Phone - 09-3677988 Perth Zoo FAX - 09-3673921.



# San Diego Zoo Opens New Exhibit: Pygmy Chimps at Bonobo Road

In early April of this year, the Pygmy Chimps at Bonobo Road exhibit opened at the San Diego Zoo. The new four-exhibit complex is a replica of an African rain forest located on the Zoo's central mesa, between Gorilla Tropics and the Treehouse restaurants and gift shop. Featured along with the pygmy chimpanzee habitat, are exhibit for African rock pythons, chameleons, and the rare African crowned eagle.

Pygmy chimpanzees (*Pan paniscus*), also called "bonobos" are not smaller versions of the common chimpanzee (*Pan troglodytes*), but are an entirely separate species. In fact, in genetics, behavior and intelligence, pygmy chimps are a bit closer to the human primate than their common chimp cousins.

A palm tree playground has been built into the new exhibit for these adventurous apes. The collection of curved and twisted *Washingtonia robusta* palms were found by Zoo horticulturists at a large Arizona grove. Blown down by a wind storm and left to grow that way for years, the palms had taken on bizarre shapes when they were finally righted. The odd twists and turns of the tree trunks make a perfect play structure for the bonobos.

Five pygmy chimps will take up residence in the new Zoo exhibit. A sixth, one-year-old Ikela, will join the group later. Ikela has been hand-raised at the Wild Animal Park's Animal Care Center, and will slowly be introduced to the Zoo's pygmy chimp clan in the near future.

For the three females, the new exhibit marks a homecoming to a new, improved home. Lana (age 13), Laverne (5), and Lolita (4) were all born at the San Diego Zoo. The males Maiko (8) and Congo (6), were born at the Frankfort Zoo.

Pygmy chimps are rare in zoos, rare in the wild, and very little is known about the species. This ape species was not even discovered by western science until the 1930s, and significant field studies on the pygmy chimp in its native Zaire rain forests didn't begin until the 1970s and '80s. Biologists estimate that fewer than 15,000 pygmy chimpanzees remain in the wild. Loss of habitat due to human population pressures is one problem for the bonobos. They are also occasionally hunted by natives for meat. Political instability in Zaire has made continued monitoring of the wild pygmy chimp populations difficult in recent years.

The San Diego Zoo became the first U.S. zoo to exhibit the pygmy chimpanzees in

1962. Kakowet, the male, became one of the Zoo's biggest animal celebrities. With his mate, Linda, he sired 10 offspring, including Lana, who returns to the new Zoo exhibit. Today, only four other U.S. zoos house pygmy chimpanzees - the San Diego Wild Animal Park and zoos in Cincinnati, Milwaukee and Columbus.

## Pygmy Chimp or Bonobo? The Name Game....

Scientists are still arguing about what to call *Pan paniscus*. Is "bonobo" politically correct? Or is "pygmy chimpanzee" the common name for the common masses?

The great ape name game debate is broiling in scientific circles. The San Diego Zoo has been cited for its fence-straddling, and, indeed, covered both bases by naming its newly-opened rain forest habitat "Pygmy Chimps at Bonobo Road".

The Zoo's television commercials call them "pygmy chimps". Zoonooz Magazine calls them "bonobos". The Zoo map says "pygmy chimps", while the educational graphics at the new exhibit talk about "bonobos".

In 1991, the Zoological Society of San Diego hosted an international "Bonobo Conservation Workshop". The same year, a fundraising drive sought donor support for the new home for "pygmy chimpanzees".

Call them fascinating. Call them acrobatic. Call them smart and call them promiscuous. But call them



Laverne (left) and Lolita, females from the Bonobo Troop at the San Diego Zoo, are shown in their new exhibit "Pygmy Chimps at Bonobo Road". The exhibit, which opened in April 1993, features grassy hillsides for rolling, rocks and twisted palm trees for climbing, and cascading waterfalls for splashing. *Photo by R. Garrison © 1993 Zoological Society of San Diego.*

"bonobos" or call them "pygmy chimpanzees".

**Point/Counterpoint: "Bonobos"**

First off, "pygmy chimpanzee" is all wrong because the animal is not a smaller "pygmy" version of the common chimpanzee. Bonobos and common chimps can be roughly the same size. It's not even a subspecies of chimpanzee. The bonobo is an entirely separate species and its name should indicate as much, argues Russel H. Tuttle, a University of Chicago anthropologist, in the February 1993 issue of Journal of Mammalogy.

Some propose it is even more distant, and should be classified in a different genus than the common chimpanzee. In bone structure, social structure, blood serum, ecological range, and other important considerations there are distinct differences between bonobos and common chimpanzees.

And consider that A.D. Horn, Nancy Thompson-Handler, and Richard K. Malenky, field biologists studying the species in Zaire, all call the animals a bonobo. The bonobo is not a true "pygmy" anything. It's a species distinct from the chimpanzee. It is, therefore, not a "pygmy chimpanzee". Case closed--call it a bonobo.

**Point/Counterpoint: "Pygmy Chimps"**

Common names should serve the common purpose. Ask 10 people on the street what a "bonobo" is, and chances are you'll get nine or more very wrong answers.

Ask the same 10 people about a pygmy chimpanzee, and most should have a clear picture, down to Order (primates), Family (great apes), and genus (chimpanzees), of what you're talking about.

Randall Susman, editor of the 1984 book "The Pygmy Chimpanzee" calls for an historical perspective. *Pan paniscus* was not known to western science until 1929, when German and American zoologists named the

species from observing a skull and bones. Harold Collidge, of Harvard College, named the species "pygmy chimpanzee" in 1933, based on study of a single small (female) skull.

Pygmy chimpanzees were little studied until the 1970s and '80s. And Takayoshi Kano, one of today's leading field biologists, indicates his choice of common names in his 1992 book title, "The Last Ape: Pygmy Chimpanzee Behavior and Ecology".

Besides, "bonobo" was first used by two Germans named Trantz and Heck in 1954, who said it was an indigenous name for pygmy chimpanzee. That claim has never been verified. Bonobo is most likely a misspelling of a Zaire town called "Bolobo", from which a few pygmy chimps were crated for shipment to Europe in the 1950s.

"There seems no reason why we should honor two Germans who for obscure reasons proposed a fantasy name," wrote Dr. Adriaan Kortlandt in the December 1992 "*Pan paniscus*/Bonobo News", a special interest newsletter. "Names given by discoverers are generally respected in zoology, botany, geography, geology, medicine and several other sciences, even if such names are as nonsensical as, e.g., Greenland," he asserts.

In closing his case for pygmy chimpanzee, Kortlandt considered the dire circumstances facing the species in the wild. "Perhaps most important," he said, "when raising money for conservation, 'pygmy chimpanzee' is more endearing than 'bonobo'."

"The name 'bonobo' should therefore be dropped by all who sympathize with these lovely apes."

--from news release of the  
*Zoological Society of San Diego*



Water Depth: \_\_\_\_\_ Water Temperature: \_\_\_\_\_

Water - Chlorinized: \_\_\_\_\_ Dechlorinized: \_\_\_\_\_ Ionized: \_\_\_\_\_ Deionized: \_\_\_\_\_

pH: \_\_\_\_\_ OH: \_\_\_\_\_

Frequency of Water Change: \_\_\_\_\_ Partial: \_\_\_\_\_ Complete: \_\_\_\_\_

Humidity: \_\_\_\_\_ Air Temperature: \_\_\_\_\_ Lighting: \_\_\_\_\_

Parental Participation or any Unusual Incubation Strategies: \_\_\_\_\_

Any Internal Development Occurring Within the Egg Prior to Hatching: \_\_\_\_\_

Special Needs Concerning Egg Care: \_\_\_\_\_

Incubation Time (days): \_\_\_\_\_ Hatching Date: \_\_\_\_\_

Approximate # of Eggs Hatched: \_\_\_\_\_ Infertile: \_\_\_\_\_

Any Fungus on Eggs During Incubation: \_\_\_\_\_

If So, Treated With: \_\_\_\_\_

**METAMORPHOSIS**

Air Temperature: \_\_\_\_\_ Environment - Land: \_\_\_\_\_ Water: \_\_\_\_\_

Temperature of Water: \_\_\_\_\_ Water Depth: \_\_\_\_\_ Lighting: \_\_\_\_\_

Appearance of Larval/Tadpole/Devo...

# A.A.Z.K. Amphibian Infant Development Data Sheet



Date: \_\_\_\_\_  
Submitted By: \_\_\_\_\_  
Position: \_\_\_\_\_  
Institution: \_\_\_\_\_  
Address: \_\_\_\_\_  
Phone: \_\_\_\_\_

Common Name: \_\_\_\_\_  
Scientific Name: \_\_\_\_\_

## **REPRODUCTIVE HISTORY**

Breeding Season: \_\_\_\_\_  
Hibernation/Dormancy Period Provided: \_\_\_\_\_  
Length of Hibernation: \_\_\_\_\_  
Temperature of Hibernation/Dormancy Period: \_\_\_\_\_  
Male/Female Ratio During Breeding Season: \_\_\_\_\_  
Artificial Means used to Promote Breeding Behavior: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Breeding Occurred on Land: \_\_\_\_\_ or in Water: \_\_\_\_\_  
Diet Supplements Fed during Breeding Season or while Gravid: \_\_\_\_\_



# A.A.Z.K. Reptile Infant Development Data Sheet

Date: \_\_\_\_\_

Submitted By: \_\_\_\_\_

Position: \_\_\_\_\_

Institution: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Phone: \_\_\_\_\_

\_\_\_\_\_

Common Name: \_\_\_\_\_

Scientific Name: \_\_\_\_\_

## PARENT INFORMATION

Approximate age of sexual maturity: \_\_\_\_\_

Male/Female ratio during breeding season: \_\_\_\_\_

Hibernation/Dormancy period provided: \_\_\_\_\_

Temperature during hibernation/dormancy period: \_\_\_\_\_

Adult Diet/Supplements: \_\_\_\_\_

Behavioral Irregularity of female prior to egg laying: \_\_\_\_\_

\_\_\_\_\_

ENVIRONMENTAL FACTORS

# American Association of Zoo Keepers Zoo Infant Development Project Reptile/Amphibian Data Sheet Guidelines



With the contribution of a variety of institutions' information, the Reptile/Amphibian section of the Zoo Infant Development Project will thoroughly outline all pertinent information required for breeding a wide range of species.

1. Despite the length of the Amphibian Data Sheets, they are both fairly simple to fill out. Please fill in all that you can. Any amount of information you can submit is important.
2. If you have additional information you feel is pertinent, please place it in the Miscellaneous Comment section. If further space is needed, please use additional paper.
3. Within specific categories, please add as much information as you can (i.e. amounts of food actually consumed, etc.)
4. All data is intended for publication - please take note to sign the ZIDP release form below and return with data sheets.



SEND COMPLETED FORMS TO:

Jeanne Bocconelli (Reptiles)  
c/o The Newark Museum Mini Zoo  
49 Washington Street  
P.O. Box 540  
Newark, NJ 07101-0540  
(201) 596-6687 or 6671

Linelle Lone (Amphibians)  
c/o Denver Zoological Gardens  
2900 E. 23rd Avenue  
Denver, CO 80205  
(303) 331-4114 (Leave message)



**AAZK Zoo Infant Development Project  
RELEASE FORM**

**All information submitted is intended for publication.  
I have complied with the guidelines of my institution regarding publications and  
have received all necessary approval.**

\_\_\_\_\_  
(name of person submitting data - PLEASE PRINT) \_\_\_\_\_ Date

\_\_\_\_\_  
signature of person submitting data \_\_\_\_\_ Institution

Air Temperature: \_\_\_\_\_ Water Temperature: \_\_\_\_\_ Substrate Temperature: \_\_\_\_\_

## INCUBATION

Artificial: \_\_\_\_\_ Natural: \_\_\_\_\_ Average Egg Weight: \_\_\_\_\_ Clutch Size: \_\_\_\_\_

Incubation Medium/Egg Placement: \_\_\_\_\_

Incubation Substrate Ratio: \_\_\_\_\_

Incubation Temperature: \_\_\_\_\_ Substrate Temperature: \_\_\_\_\_

pH: \_\_\_\_\_ Humidity: \_\_\_\_\_ Misting Frequency: \_\_\_\_\_

Incubation Time (days): \_\_\_\_\_

Hatching Date: \_\_\_\_\_ # Infertile: \_\_\_\_\_ # Full Term Dead: \_\_\_\_\_

Hatchling Weight (avg.): \_\_\_\_\_ Hatchling length (avg.): \_\_\_\_\_

## DIET

Date of 1st shed or full yolk absorption: \_\_\_\_\_

Diet/Supplements Offered to Hatchlings: \_\_\_\_\_

Date of first food intake: \_\_\_\_\_

Feeding Schedule: \_\_\_\_\_

Feeding Strategies used: \_\_\_\_\_

## MISC. COMMENTS

## EGG LAYING

Humidity of Environment: \_\_\_\_\_ Temperature: \_\_\_\_\_ Lighting: \_\_\_\_\_  
Special Plantings or Objects Provided to Lay Eggs On or Under (Include Water Depth & Temperature): \_\_\_\_\_

Approximate # of Eggs Laid: \_\_\_\_\_ Coloration of Eggs: \_\_\_\_\_  
Eggs Deposited all at once: \_\_\_\_\_ or at intervals: \_\_\_\_\_  
Eggs laid singly: \_\_\_\_\_ or in a Mass: \_\_\_\_\_  
If in a Mass - Any Substrate Surrounding the eggs(i.e. foam, gel-like, etc.): \_\_\_\_\_

Eggs Placed Above: \_\_\_\_\_ or Below: \_\_\_\_\_ Water Level  
pH: \_\_\_\_\_ OH: \_\_\_\_\_  
Water - Chlorinated: \_\_\_\_\_ Dechlorinated: \_\_\_\_\_ Ionized: \_\_\_\_\_ Deionized: \_\_\_\_\_

## INCUBATION

Artificial: \_\_\_\_\_ Natural: \_\_\_\_\_  
Medium/Substrate Used: \_\_\_\_\_  
Depth of Medium/Substrate: \_\_\_\_\_  
Type of Water Circulation/Filtration System Used: \_\_\_\_\_

Size of individual when metamorphosis begins: \_\_\_\_\_

Median Metamorphosis date: \_\_\_\_\_

Average Weight: \_\_\_\_\_ Average Length: \_\_\_\_\_

**MISCELLANEOUS COMMENTS**





## CONFERENCE '93 SCHEDULE

### ■ SATURDAY, OCTOBER 9

Closed Board Meeting  
Trip to Tennessee Aquarium  
Early Registration

### ■ SUNDAY, OCTOBER 10

Registration  
AM: State of the Association Meeting  
PM: Committee Meetings  
Ice Breaker

### ■ MONDAY, OCTOBER 11

Welcome Breakfast/Roundtables  
Paper Sessions & Workshops  
Bar Brachiation at Underground Atlanta

### ■ TUESDAY, OCTOBER 12

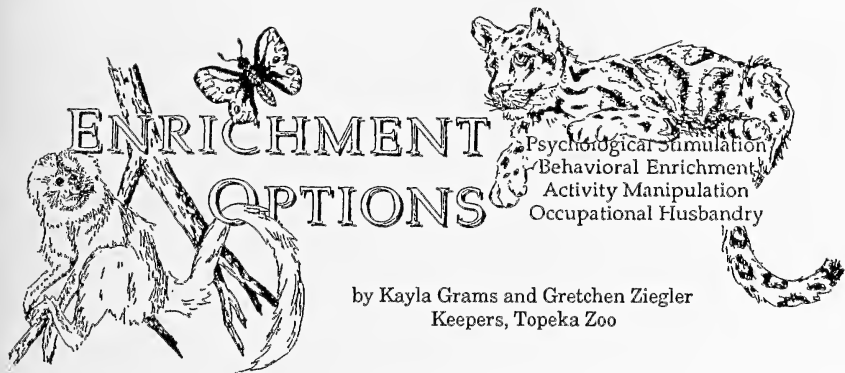
Zoo Day: Tours and Workshops  
Breakfast and Lunch at zoo  
PM: Reception, Silent Auction, Workshops

### ■ WEDNESDAY, OCTOBER 13

Tour Fernbank Natural History Museum  
Stone Mountain Park: Zoolympics, Awards, Free Time

### ■ THURSDAY, OCTOBER 14

Paper Sessions & Workshops  
PM: Reception, Banquet, Live Auction

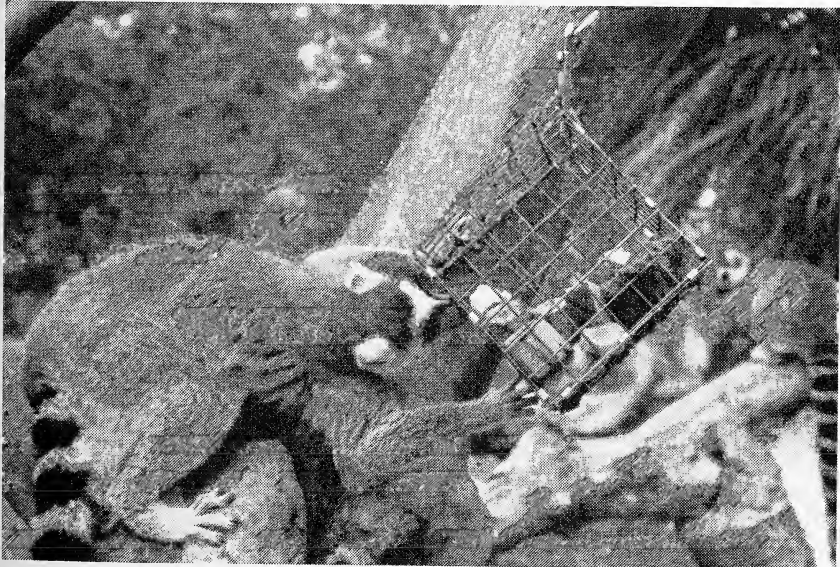


The following article was submitted by Anita Schanberger, Rob Miley, Bill Bonucci, and Sheila Green, Animal Keepers from the Phoenix Zoo. Thanks for an excellent article!

### FEEDER DEVICE FOR PRIMATES

We currently house a variety of primates and are continually experimenting with various techniques and methods by which to provide enrichment activities for these animals. Most of the primates are fed by placing their food on shelves or platforms requiring a minimum of effort with regard to feeding behavior. We wanted to design a simple device that would not only offer the animals an alternative in feeding strategies but would also hopefully provide a manipulative feeding challenge activity.

We used wire mesh and cut out 6 individual pieces of identical size so that the pieces could be assembled into a box. The size of the box and the mesh size used for each species was determined by experimentation. Once each wire mesh piece was cut to size, wire cutters and a grinder were used to smooth out any rough areas along the outside edges. The individual pieces were then connected together into the form of a box with the use of J-clips or cage slips. The last piece attached to the box was used as the lid and this piece was attached with hog rings. The lid was then secured shut with either the use of quick links or snap links. The feeder device is then attached to eye screws that are installed in tree limbs or perches throughout the exhibit.



Ringtail Lemur (*Lemur catta*) shown interacting with a feeder device that was attached to a log with a eye screw and snap link. (Photo by A. Schanberger)

### **Enrichment Options,** *Continued*

The feeder devices are made available to the animals in various ways. The device can be directly clipped to an eye screw or it can be hung from a rope or some other type of hanging device so that it provides an additional challenge for the animal. The devices are also rotated throughout the exhibit to provide variations in feeding locations.

The feeder devices are fairly simple to construct and it offers an alternative method for keepers to present daily diets to the animals. The primates seem to enjoy the challenge of working for their food since animals have been noted trying to obtain food from the feeder devices even though the same food items were easily available in close proximity. We will continue to experiment with this basic design in an effort to provide additional feeding challenges in the future.



**White Throated Capuchin Monkey (*Cebus capucinus*) with a feeder device hung from cable wire covered with bamboo. (Photo by Anita Schanberger)**





# Elephant Set

(Editor's Note: Beginning with the March issue, this column has contained material on elephant morphology and physiology; nutrition; external diseases including parasites; internal diseases including systemic, gastrointestinal and respiratory; and use of anesthesia. These articles were part of an extensive research manuscript written by Ursula Bechert, DVM of Corvallis, OR.)



## Internal Diseases Part I

By Dr. Ursula Bechert, DVM  
Corvallis, OR

### Systemic Illnesses

Elephants are susceptible to many of the pathogens that cause disease in cattle and horses (Schmidt, 1986). Anthrax can be transmitted through contaminated feed and water. It has been epidemic in Asian work elephants, making routine vaccination necessary (Schmidt, 1986). Possible signs include sudden collapse and death, anorexia, high fever, colic, hemorrhage resulting in mucosal petechiation or subcutaneous hematomas, severe pain, paralysis and bloody diarrhea. Diagnosis can be difficult since blood smears may not always reveal *Bacillus anthracis* (Mustafa, 1984). Treatment is with massive, repeated doses of penicillin at 5000-20,000 IU per kg body weight. Other potentially exposed elephants should be vaccinated and carcasses disposed of with great care.

Tetanus is associated with unsanitary housing conditions, poor foot care, tusk infection and hook wounds (Schmidt, 1986). Signs are similar to those seen in the horse. Treatment consists of massive repeated doses of antitoxin, penicillin and supportive care. Chloral hydrate is useful to control muscle tetany and can be given rectally.

Septicemic pasteurellosis or hemorrhagic septicemia is a rare but acute and highly fatal disease with signs similar to anthrax (Schmidt, 1986). Death can occur within 12 hours and treatment is usually futile. Vaccination should be considered if the herd has a problem with this disease.

Foot and mouth disease was first reported in 1935 by Ramiah in an Asian elephant. The role of elephants in the epidemiology of foot and mouth disease has been uncertain. Susceptible species include cattle, water buffalos, pigs, sheep, goats, eland, antelope, deer and man (Pyakural, et al. 1976).

African elephants experimentally infected with foot and mouth disease strain SAT 2 virus developed typical disease (Howell, et al. 1973). Lesions and signs included diphtheritic ulcers on the tongue and buccal cavity, myocarditis, fever and lameness with severe sloughing of the sole of the foot. Viremia occurred 24-48 hours after inoculation and persisted for up to six days. Virus was isolated from blood and vesicular fluids. Maximum antibody titers were detected on the 21st day after infection but were relatively low and dropped rapidly within a few days. No transmission of the disease occurred between susceptible and infected elephants even though they were in close proximity to one another.

A natural outbreak of foot and mouth disease occurred in Asian elephants with the Type O virus (Pyakural, et al. 1976). Signs included vesicles and ulcers in the mouth and on the feet, high fevers (105° F) and lameness. Fifty percent of 16 animals in the herd contracted the disease with elephant-to-elephant transmission occurring. The authors concluded that those elephants not developing clinical signs probably had protective levels of antibody as a result of previous exposure to the virus. Water buffalo were suspected of being the source.

## **Elephant Set: Internal Diseases - Part I** *Continued*

It appears that elephants are susceptible to and possible transmitters of foot and mouth disease; however, only certain strains may be involved. The disease in elephants is treated similarly to cattle (Schmidt, 1986).

Elephantpox is a vesicular disease of the skin with typical pox-like lesions and can be fatal (Schmidt, 1986). It is zoonotic. Signs include swollen and draining temporal glands, conjunctivitis, erosions and ulcerations of the mucous membranes, difficulty swallowing, fever, hoof sloughing and lameness. Duration of illness is 1-6 weeks with a 2-4 week incubation period. Diagnosis is made by electron-microscope examination of vesicular fluid or crusts. Treatment consists of isolation of sick elephants, supportive care, antibiotics for secondary infections and vaccination of exposed elephants and personnel with human smallpox vaccines.

Subcutaneous edemas can be associated with general debility, great anxiety or stress (angioneurotic), or anemia and hypoproteinemia caused by liver flukes (Schmidt, 1986). Other specific causes include infestation with hookworms or intestinal flukes, congestive heart failure, renal disease or inanition (Caple, et al. 1978). Small pockets often spontaneously resorb without treatment, but larger areas of edema should be drained to prevent infection or pressure necrosis and sloughing.

### **Gastrointestinal Disorders**

Salmonellosis is common in elephants and often fatal (Schmidt, 1986). Sources of the bacteria include humans, feed contaminated by rodents, or fecal ingestion (Chooi and Zahari, 1988). Signs include diarrhea which is occasionally bloody, loss of appetite, weakness and fever. Lameness and necrosis of the extremities have been reported as a sequela to chronic salmonellosis in calves (Scott, 1984). Salmonellosis should always be a differential diagnosis for diarrhea. The hematological response is usually neutropenia and hyperfibrinogenemia (Janssen, et al. 1984). Fecal cultures give the definitive diagnosis but several cultures may be required.

Necropsy findings include a diphtheritic membrane covering most of the mucosal surfaces of the cecum and colon with extremely reddened and thickened small intestines containing numerous ulcers (Chooi and Zahari, 1988). Treatment should be immediate, aggressive and include fluid therapy with high doses of antibiotics (either ampicillin, chloramphenicol, kanamycin or gentamicin), before culture and sensitivity results arrive, to prevent carrier state. Fifty to 200 L of replacement fluid per day for 5-10 days may be required. A bland diet of cooked rice and warmed water should be offered for a few days.

Enterotoxemia may be caused by food contamination with clostridial spores, especially in young elephants (Schmidt, 1986). Laboratory identification of the toxin and culture confirm the diagnosis. Treatment consists of administration of antitoxin and high doses of antibiotics. If this is a common problem in an elephant herd, a vaccination program should be considered.

Colibacillosis occurs in newborn calves not receiving enough colostrum and living under poor sanitary conditions (Schmidt, 1986). Signs are similar to those in bovine calves with this *E. coli* infection. Treatment is usually with ampicillin or kanamycin and improved sanitation.

Colic is usually caused by a change in diet or overeating of rich feed, green corn stalks, watermelon or clover hay (Schmidt, 1986). It can also be caused by excess sand or gravel ingestion (Schulze, 1986). Signs of colic are similar to those seen in the equine as well as abnormal postures and biting of the trunk tip. Treatment is first attempted with large, repeated soapy warm-water enemas. Mineral oil can also be used in an effort to relieve the blockage. Other treatments are similar to those used in equine colic cases. Supportive care includes intravenous fluids. Following treatment, standard feed should be given in small quantities until normal digestion resumes. Volvulus or intussusception has occurred in elephants and is usually the result of attaining some type of abnormal position. The course is usually rapid and fatal. Elephants should not be rolled over or put into unusual positions.

## Elephant Set: Internal Diseases - Part I, Continued

Choke has been reported in the elephant and is diagnosed by the inability of the elephant to swallow its saliva (Schmidt, 1986). Several elephants have died of asphyxiation when large foreign objects became entrapped in the back of the pharynx. Treatment is by removal of the object.

Gastrointestinal parasitism is common and has been reported in 83% of 532 working Asian elephants examined by Jainudeen and Scheurmann (1975). Bots (*Cobboldia loxodontis*) and *C. chrysidiformis*) were frequently found in the pharynx, esophagus and stomach of wild African elephants (Basson, et al. 1971). Mucosal erosions were the primary lesion.

Nematodes that cause disease in elephants include ascarids, oxyurids, strongylids, paramphistomes, ancylostomes, syngamids and filarids (Schmidt, 1986). Thiabendazole is an effective treatment for most nematodes (Caple, et al. 1978).

*Parabronema africanum* (slender nematodes) were found burrowed into the mucosal and submucosal layers of the stomach in 68% of 22 elephants examined by Basson, et al. (1971). Ulcers and inflammation with granulation tissue were the main lesions.

Ascarids are found in muscles, large-artery fascia, bile ducts or intestines but usually do not cause severe problems (Schmidt, 1986). Oxyurids are found in the intestines but do not cause problems unless present in overwhelming numbers. Treatment for ascarids and oxyurids, if causing problems, has been successful with phenothiazine (Jainudeen and Scheurmann, 1975).

*Strongylus* and *Strongyloides* infestations cause the same signs seen in horses and should be treated similarly (Schmidt, 1986).

Profuse diarrhea, depression and anemia result from severe *Paramphistomum* infestations of the large intestine (Schmidt, 1986). Treatment with chlorsalicylamide has been successful. *Bathmostomum sangeri* causes severe fatal diarrhea in Asian elephants, especially the young (Schmidt, 1986). Treatment is with subcutaneous injections of disophenol at a dosage of 4 mg/kg body weight.

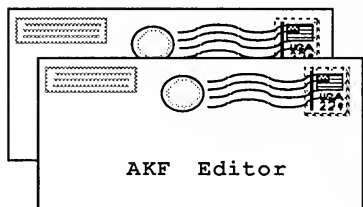
## Next month: Internal Diseases, Part 2 - Central Nervous System, Respiratory and Liver Diseases

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## Elephant Set: Internal Diseases - Part I, Continued

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## Letters to the Editor

*(Letters to the Editor are welcome at any time for those wishing to comment on articles published in AKF or about matters pertaining to the Association)*

Dear Editor,

I am writing this letter in response to the letter published last month from Renee Belknap-VanDerHeuvel. I really wish if she had a problem with my letter she could have spoken to me personally back in 1992 when it was written. It's sad for me to think that she has been angry about this for so long. I was asked to write a letter telling about my trip to Africa and that is exactly what I did. AAZK is a forum--not just for facts but for opinions also. Just as my letter was my opinion, so too was her letter. She was correct in that I have never been on any other safari, but has she been on a free trip to the Sanctuary that she had for years spent 40 hours a week of volunteer time raising money for? If she never went to Ngare Sergoi as a special guest and been treated like royalty and family, how can she judge my trip?

I truly believe that any trip to Africa whether on foot, horseback or bus is well worth the money and would encourage anyone to go however possible. The line I wrote was "lions being bored with people" - not the same as a "boring trip"! How anyone can take one phrase from that letter and change it around so much is beyond me. I never meant to downgrade any other trip. I believed I was only trying to promote the Sanctuary and BFR. The letter was an enticement to excite the membership to bowl and that is why it was part of the BFR packet.

I am really sad to see the Forum have to stoop so low as to print bickerings over peoples' opinions. We are all working to save species and habitat. I believe that is more grand than wasting time bickering over misinterpretations of phrases. I personally feel my time is worth more and I hope we can all get back to the things that count in life.

Sincerely,

Patty Pearthree  
Indianapolis Zoo, Indianapolis, IN

*(Editor's note: The function of the Letters to the Editor column is to provide an avenue for comment by any AAZK members on material published in Animal Keepers' Fo.um.)*



# THE RAINBOW GARDEN

By

*Andrea Vaillancourt*

*former Educator and Director of Family Programs and Zoo Camp  
Audubon Zoo, New Orleans, LA*

*current Educator at Queens Wildlife Conservation Center, Flushing, NY*

"There is no other knowledge than the door Nature opens; and there is no truth except the truth we discover in Nature."

*Luther Burbank, American horticulturist 1849-1926*

One lazy afternoon while swinging in the hammock in my New Orleans backyard, I observed a ruby throated hummingbird traveling from one hibiscus to another drinking sweet nectar and shimmering in the sunlight like a precious jewel. At the same time, two sulphur butterflies were dancing together in the air with brief stops on the azaleas conveying the image that my backyard was their private ballroom. All the while, a fledgling male cardinal was watching from a low branch in a tree near the hammock. So much life! Not unlike the Audubon Zoo where I worked, but yet so different. No bars, no cages, and no admission price. These creatures had come to visit my garden.

Not knowing very much about gardening except the enjoyment that came from it, I wanted to share the discovery of my backyard zoo with my students. This desire grew when a family of greenhouse frogs, measuring less than an inch, was revealed living among the yellow daylilies and the Mexican heather. This finding brought back an earlier conversation with Marsha Fernandez, one of the Primate Keepers at the Audubon Zoo in New Orleans, LA.

Marsha had attended a seminar at a primate conference in 1989 in which the advantages of maintaining a garden on zoo grounds had been presented. The concept behind zoo-based gardens involved providing fresh vegetables for primates, bears, nutria, and the occasional human, while saving on produce costs. The seed, so to speak, had been planted. While some zoos do have gardens we were not familiar with zoo-based education gardens. It became clear that this garden could be incorporated into the education programs for the zoo's students.

Marsha and I began meeting to determine the logistics of the garden in November of 1991. It was decided that the garden would be given a name. The Rainbow Garden seemed more than appropriate since it would include all the colors of the rainbow represented by the plants, the animals and the children from all ethnic backgrounds who would come to learn. With the help of Tran Asproditis, Director of Horticulture at the Audubon Zoo, and the Horticulture Department, we began preparations for the garden.

First we found a prime location for the garden with good exposure to sunshine adjacent to the zoo classroom so the children could look through the window and observe the colors. Next, the size of the garden was determined and the plants to be grown identified. We opted for six plots measuring 3 ft. x 12 ft. (1.7m x 6.5m) sectioned off by railroad ties as opposed to a large open garden. This way the space was controlled and easily accessible to the students. Due to the shape of the sidewalk and the availability of railroad ties, we were able to add a larger section for watermelons, pumpkins and two smaller herb and flower sections surrounding our patio and workspace. The garden had been planned after much research and many meetings. We had secured our area, decided on a name, and had agreed on three rows designed to attract butterflies and hummingbirds with such plants as Lantana, Celosia, Parsley, Dill, Phlox, Coreopsis, Red-hot Poker, Impatiens, Hollyhock, and Alyssum and three rows designed for vegetables and other edibles for the zoo animals and our students.

With the design stage completed, we were eager to get our fingers in the soil. As the horticulture staff cleared the previously weed-congested trash area, Marsha and I began

### **The Rainbow Garden.** *Continued*

cuttings and planted seeds for the garden with the assistance of Paul Keith, Audubon Zoo's Chief Horticulturist. Our aim was to have a few plants established and attracting wildlife before the children arrived on 15 March for the first class. The students would then be able to observe the plants in different stages from seeds to full grown. The reasoning behind this was to show the children what becomes of a seed from planting to maturity and what is needed along the way for survival.

All of the concepts we wanted to teach, from seeds to weeds, were put into formal lessons. Posters were then devised and with the help of Grow Lab and Project Learning Tree materials (1), many exciting activities were incorporated into our garden.



**The Rainbow Garden at the Audubon Zoo in New Orleans offered students the opportunity to not only help in its care, but also to learn about how plants grow and how they interact with animals. (Photo by the author)**

## The Rainbow Garden, *Continued*

As the deadline of 15 March grew close, interest in the Rainbow Garden grew and many individuals volunteered their time towards making the garden a success. We spent long days pulling weeds, planting seeds, turning the soil and writing lessons all in anticipation of our first Rainbow Garden class.



**Young pupils in the Audubon Zoo's Rainbow Garden learned by doing as they assisted in the care of the plants. The Rainbow Garden was located adjacent to the Zoo's education classrooms and was incorporated into their curriculum. (Photo by the author)**

The first class began as the garden did, with one student and one seed. I'll call our student Miss Sunshine as she not only brightened our days but the garden as well. We learned about seeds and what they needed to grow from pictures, the posters we'd drawn, and by dissecting seeds in the classroom. Next, we moved to the garden where we began raking our fingers through the soil, smelling and tasting the previously established flowers and herbs. It was decided that Miss Sunshine would plant our first seeds into the garden, sunflower seeds. This energetic six-year-old took care planting the seeds as described in our song for the day: "first you rake the earth, then plant the seed and cover it with care..." We sang other songs such as "Froggie Went A Courtin'" when surprised by a Gulfcoast toad hiding underneath the Red-hot Poker plant.

We sang as we moved from one row to the next and when class was nearing the end, Miss Sunshine sang us a song as we planted the watermelon seeds into our special patch. "We work much faster when we're singin' in the garden, diggin' in the garden, plantin' in the garden..." She had taken the events of the day and put them into her own special song for us. She had learned something from us, but more important we had learned something from her. Gardening involves caring for and about life; from plants to animals and a certain respect comes from nature for nature when gardening with children.

In the final days of the summer garden, I came across a book published by the Brooklyn Botanic Garden in which Frances M. Miner, retired Curator of Instruction at the Brooklyn Botanic Garden, described the history of gardening in the children's garden begun in 1914. One particular passage from Get Ready, Get Set, Grow! reached out and touched me.

"Often the idea has been expressed that every child should have a puppy. Every child should also have a garden, for only in a garden can he learn to evaluate the true importance of plant life. A puppy is a living thing, so is a plant. It is necessary to know something of both." (2)

## The Rainbow Garden, *Continued*

We had incorporated gardening with animals and plants and the result was a highly successful garden as children and adults both realized that taking a chance, planting a seed and singing a song could create a garden full of the colors of the rainbow.

### Acknowledgments

Special thanks to Marsha Fernandez, Tran Asprodites and the Horticulture Department, and Ann Weber-Rabin, Curator of Education at the Audubon Zoo, for believing in the project and in me.

### References

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Project Learning Tree sponsored by the Western Regional Environmental Education Council and American Forest Foundation - 1250 Connecticut Ave. NW, Washington, DC
2. Ideas for Parents and Teachers. 1000 Washington Ave., Brooklyn, NY 1986 by Brooklyn Botanic Garden.



## Book Review

### Concise Oxford Dictionary of Zoology

Edited by Michael Allaby  
Oxford University Press, NY, NY 1991  
508 pgs./Hardback

*Review by Cheryl Frederick  
Zoo Attendant, Franklin Park Zoo  
Boston, MA*

From Aardvark to Zymogenous (organisms whose presence in a given habitat is transient) this book is the specialized offshoot of the acclaimed Oxford Dictionary of Natural History. Michael Allaby, general editor of that text, borrowed from it the bulk of the material for this book. This dictionary is distinct because these entries have been scrutinized, amended and in many cases rewritten to tailor them for use by students.

Subjects covered include: ecology, evolution, animal behavior, earth history, cell structure and function, physiology, zoo geography, taxonomic principles, and genetics. Taxa include: invertebrates, fish, reptiles, amphibians, birds and mammals. Definitions range from brief descriptions, i.e. fossorial (burrowing) to long paragraphs with \*asterisks to denote the terms and taxonomic information which can be cross-referenced. Zookeepers, especially will appreciate the ease with which any animal's genus + species name can be looked up using a common name or vice-versa, no matter how obscure the animal.

As Allaby states in the preface, this dictionary is "for students, professional non-zoologists and non-professional zoologists". I found this book to be both useful and limited. Its limitations are the result of its focus on its use by students. The esoteric or jargonistic terms often seen (but not always fully understood) in scientific journals will probably not be defined here. Oddly enough the words "zoo", "zoology" and "zookeeper" are also not included. Nonetheless, this book is all it claims to be, and it remains singular in its attempt to cover this material. Using this dictionary is a lot like taking an upper-level biology course, without the exams.





# Foraging Patterns of Semi-Free Ranging Long-Tailed Macaques at Monkey Jungle

By  
David M. Powell, Senior  
Department of Biology  
University Of Miami, Miami, FL

## Introduction

Monkey Jungle in Goulds, FL maintains a colony of approximately 80 Long-tailed macaques (*Macaca fascicularis*) in a tropical hardwood hammock. The colony is composed of adults of both sexes, lactating females, juveniles, yearlings and infants. These macaques are fed fruit and primate chow during daily shows; they are also given peanuts and raisins by tourists.

During Hurricane Andrew most of the hammock was destroyed, and the park was closed to visitors. Therefore the macaques had to engage in more supplemental foraging due to loss of visitor handouts. I undertook a study of these macaques to determine if there were patterns in their foraging and feeding. Specifically I asked: 1) What are the food preferences of the Monkey Jungle macaques as a whole and according to age/sex class? and 2) Where do they do their foraging?



The photo at left shows the devastation to the plant life at Monkey Jungle, Goulds, FL by Hurricane Andrew on 24 August 1992. In addition, all perimeter fencing was either damaged or destroyed and many of the facilities animals roamed freely in the area until they could be recaptured and perimeter fencing restored. (Photo by the author)

**Methods**

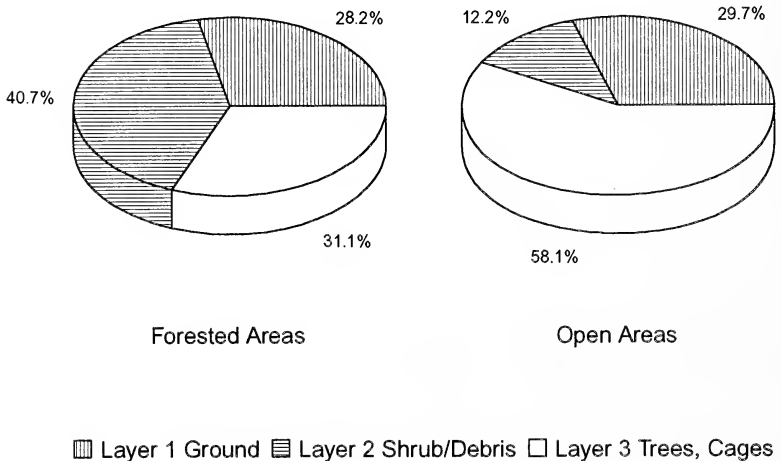
This colony was established in 1933. The macaque habitat encompasses 2.4 hectares (5.93 acres). In order to determine food type preferences and foraging location patterns, all occurrences data (Altmann, 1974) were gathered on feeding by recording when it occurred, what foods were eaten, and who ate them. Each feeding bout was scored on four aspects: 1) open versus forested area; 2) vertical habitat layer; 3) food type; and 4) age/sex class. Open areas included those locations that were previously cleared and those that were cleared after the hurricane as a result of debris removal. The macaque habitat was divided into three vertical layers: Layer 1 was the ground and forest floor; Layer 2 included shrubs, bushes, and debris piles; Layer 3 included intact trees, vines, walkways, and cages. Food items were divided into: invertebrates, fruit/nuts, leaves/herbaceous stems, woody stems/bark, primate chow, and all "other" including cardboard, plastics, and roofing material.

Two hundred and fifty-one feeding bouts were analyzed. Prevalence was calculated for each food category based on the total number of feeding bouts recorded.

**Results**

Of 251 recorded feeding bouts analyzed, 70.4% occurred in forested areas. Most feeding bouts (n = 177, 40.7%) in forested areas took place in Layer 2 (Figure 1); in open areas, most bouts (n = 74, 58.1%) occurred in Layer 3.

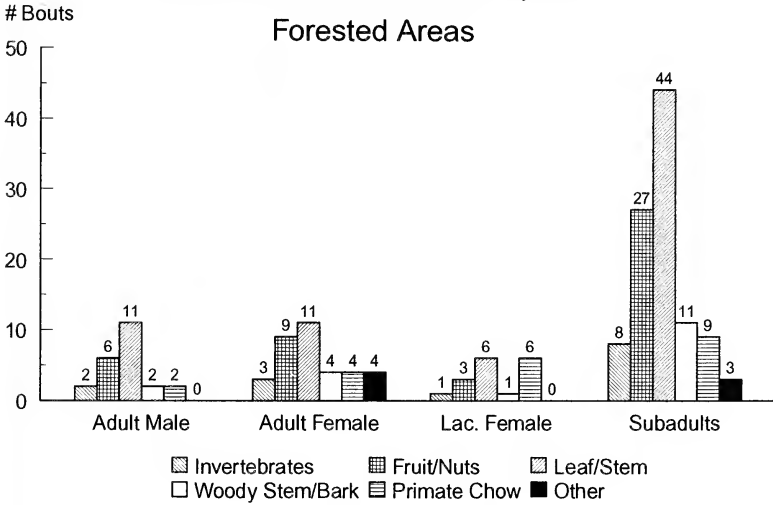
Figure 1  
Distribution of Feeding Bouts by Foraging Layer



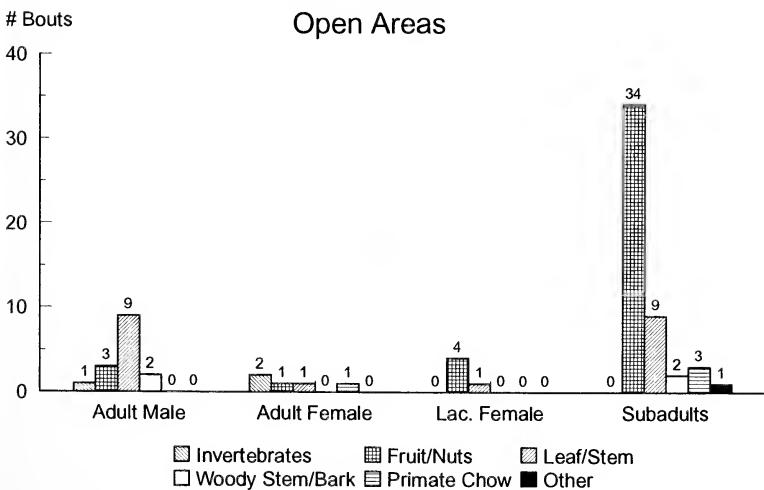
**Foraging Patterns in Semi-Free Ranging Long-tailed Macaques, Continued**

Within forested areas, leaves and herbaceous stems were the items eaten most often by all age/sex classes (Figure 2). Lactating females ate as much primate chow as they did leaves and stems. In open areas adult males mainly ate palm leaves (n = 15, 60%); adult females did not show a strong preference for a particular food type (Figure 3). Lactating females were observed eating only fruits, nuts, and leaves in the open area. Subadults had a high intake of fruits and nuts in the open areas (Figure 3).

**Figure 2**  
Frequency of Foods Eaten by Item



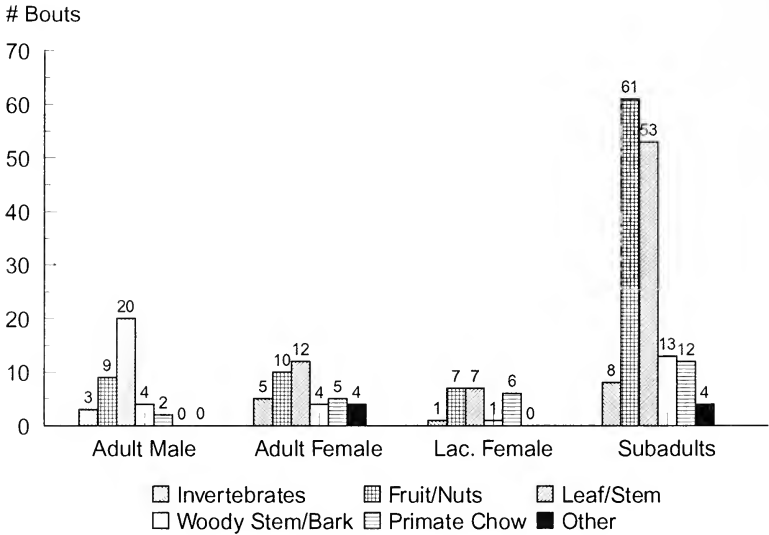
**Figure 3**  
Frequency of Foods Eaten by Item



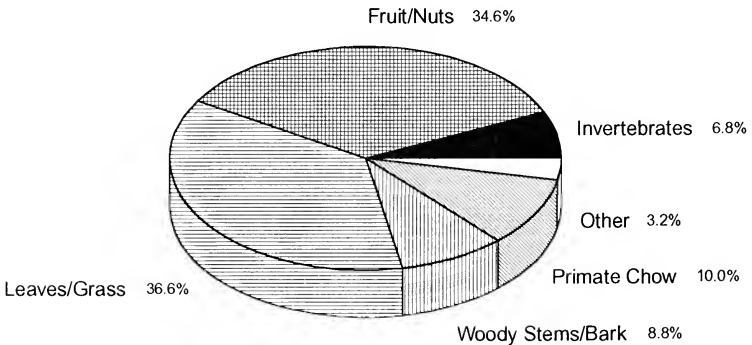
**Foraging Patterns in Semi-Free Ranging Long-tailed Macaques, Continued**

Combined data from open and forested areas show that leaves and stems and fruits/nuts were the most frequently observed items to be ingested in all age/sex classes (Figure 4). Plant material accounted for 80% of all observed feeding bouts (n = 25) (Figure 5).

**Figure 4**  
**Frequency of Foods Eaten by Item**  
**All Areas**



**Figure 5**  
**Food Type Prevalence**  
**All Areas**





The photo on left shows a subadult Long-tailed macaque foraging on new leaves and buds. The photo at right is of an adult female feeding on the forest floor at Monkey Jungle. (Photo by the author)

### Conclusions

Most trees and bushes were blown over or crushed during the hurricane; therefore, it is not surprising that most of the feeding bouts took place in piles of plant debris in the forested areas. The Monkey Jungle macaques showed a preference for fruits, nuts, and other plant material. They devoted considerable time to foraging for insects. They stripped away bark on living and rotting wood and searched for insects. Adult females and subadults sat on the ground and sifted through the litter for extended periods of time looking for invertebrate prey. One adult male actively pursued and caught a wasp.

Most of the natural fruit in the hammock was either already consumed by the macaques or destroyed by the hurricane. The fruits that the macaques ingest now are those that they carry away from the food pans or those that they can steal from food troughs of caged animals. The hurricane destroyed the visitor walkways thus giving the macaques access to these troughs. They were able to exploit this new food source to supplement their diet. They quickly adopted a strategy of congregating around cages and raiding food troughs in groups at feeding times. Adopting this new strategy attests to the macaques' intelligence and adaptability.

In summary, the semi-free ranging, provisioned colony of Long-tailed macaques at Monkey Jungle exhibits foraging patterns with regard to food eaten (they prefer fruits and other plant material) and where foraging occurs (in forested areas in the shrub/debris layer).

### Acknowledgements

I would like to thank Sian Evans and the staff of Monkey Jungle for their assistance. I would also like to thank Linda Taylor for her assistance and comments.

### References

- Altmann, J., 1974. Observational Study of Behavior: Sampling Methods, *Behavior*, 49: 227-267.



# Trib, Gorilla Troop Patriarch Dies at Wild Animal Park



Trib, the 34-year-old patriarch of the San Diego Wild Animal Park's Lowland gorilla troop, died of heart failure on 2 June 1993. Perhaps the best known "gorilla father figure" in captivity, Trib came to the San Diego Zoo in 1960 as a year-old orphan captured in the wild and raised at the Brazzaville Zoo, Republic of the Congo (now Zaire). He was named in honor of San Diego Tribune publisher James S. Copley who personally financed Trib's shipment from Africa. At the age of 12 years, Trib was transferred to the SDWAP where he became head of that new facility's gorilla troop.

Trib sired eight offspring at the Park, starting with Jim in 1973 and ending with Paul Donn in 1989. He was well known to both keepers and visitors as a firm but gentle father.

"Trib was a unique gorilla," said Senior Keeper Peggy Sexton. "He made our job a lot easier than it might otherwise have been, by being so accepting and protective of the youngsters. Trib was so insightful; when we'd introduce a youngster to the group, he would lie down on his stomach and stay perfectly still, so the little one would not be frightened," said Sexton. "When the infant was calm, Trib would raise just one finger, then extend an open hand, and gently reassure the newcomer of its welcome."

Trib kept constant vigilance over his family, frequently playing with the little ones but quick to stop any play he considered too rough. "He'd just give them 'the look' and they'd knock it right off," said April Silldorff, Senior Keeper. At approximately 450 lbs. and a height of 6ft 1 in, Trib was an imposing figure; but he never misused his strength toward keepers or fellow gorillas.

He suffered from epilepsy, an illness that veterinarians treated with drugs and diet his entire life. While medication controlled his seizures and allowed him a life far longer than would otherwise have been expected, resultant side-effects included gingivitis and progressive cataracts. Trib was anesthetized annually for treatment of his gums and regular eye checks.

Keepers found Trib about 5 p.m. after a volunteer observer reported that the gorilla had not moved for hours from his apparent sleeping position. Sensing Trib's condition, the other gorillas had grouped together at the opposite end of the exhibit. A necropsy performed the following day at the Pathology Dept. of the San Diego Zoo confirmed a diagnosis of heart failure as the cause of death. Captive gorillas live to an average age of 40 years with the oldest gorilla on record being Massa, a male who lived to be 53 at the Philadelphia Zoo.

The lowland gorilla is an endangered species, with fewer than 5,000 estimated surviving in their native western and central equatorial Africa. There are approximately 320 in captivity in North America and about 800 worldwide, according to Tom Hanscom, a spokesman for the SDWAP. According to Hanscom, the Los Angeles County Natural History Museum will perform a taxidermy on Trib.

--from *San Diego Wild Animal Park News Release*, 3 June 1993



## Remains of Gorilla Could Solve Mystery of Disappearance of Eminent Silverback Ziz

The remains of an endangered mountain gorilla have been discovered and are thought to be those of Ziz, one of the largest of the remaining 630 mountain gorillas in the world. Veterinarians speculate the body is that of Ziz because it was found several hundred yards from where he was last observed. The decomposed remains include bone, tissue and silver hair - suggesting the remains are those of a silverback. Ziz was last seen alive on 20 April by advisor to Morris Animal Foundation, Elizabeth Macfie, DVM, and The Dian Fossey Gorilla Fund's Louis Nzeyimana, who were observing Group 5, Ziz's family group, for possible signs of respiratory disease. Ziz was reported to have been in good health.

## Karisoke Mountain Gorilla Update, *Continued*

Researchers have been searching for Ziz since their return to Karisoke Research Center to assess the condition of the mountain gorillas and the camp that was evacuated in February because of military activity. Ziz was presumed to be dead when researchers could not find him or any signs of his night nests. On Saturday, 5 June, Karisoke Research Center trackers found the remains which are currently being analyzed by Morris Animal Foundation veterinarians to determine the cause of death.

Ziz had been the dominant silverback of Group 5, the largest of all known mountain gorilla groups with the longest documented history of the current research groups. Born in January of 1971, Ziz has been described as a poised, gentle and nurturing silverback.

The Karisoke Research Center and Volcano Veterinary Center, which provides protection and health care to 310 endangered mountain gorillas, had to abandon operations in February. The mountain gorillas living in the Parc National des Volcans managed on their own through the civil unrest without the care of dedicated Rwandans and international scientists for their survival.

Morris Animal Foundation's Volcano Veterinary Center is one of the few facilities in the world to provide health care for an endangered species in its natural habitat. The Dian Fossey Gorilla Fund's Karisoke Research Center, founded by the late Dian Fossey in 1967, studies the behavior of mountain gorillas. For more information call toll-free at 1-900-243-2345.

--from *The Dian Fossey Gorilla Fund News Release*, 7 June 1993



## **Announcing the 23rd Annual North American Symposium on Bat Research**

**13-16 October, 1993**

**Host Institutions: The Lube Foundation and  
The University of Florida**

The Symposium will be held at the University of Florida and the symposium hotel site is the University Holiday Inn. Registration fees are \$30.00 for students; \$40.00 for all others. The hotel rates are \$40.00 per night for up to four persons in a room. The Holiday Inn also runs a courtesy shuttle from the airport to the hotel and will meet all scheduled flights. Delegates must make their own room reservations by calling 1-800-465-4359 and/or 904-376-1661.

The Lube Foundation will host a welcoming party on Wednesday evening at 7:00 p.m. and a picnic-barbecue (costing \$15.00 per person) is being planned for Friday evening.

There will be spaces for approximately 72 oral papers in the regular sessions and a nearly unlimited number of posters. Papers will be awarded place on the program on a first come first served basis. After the 72 slots have been filled, all others will be offered the option of presenting a poster. There will be a special session, "Biological Patterns, Processes, and Predictions on the Future of Megachiropterans in the South Pacific" arranged by Frank Bonaccorso and Brian McNab, Dept. of Zoology, University of Florida. There will also be a special section on "Bat Conservation and Educational Programs for the Public". A \$500.00 honoraria will be awarded to the best manuscript and presentation by a student.

For registration forms, program information (abstract submission forms), or details on student honoraria submission, please contact G. Roy Horst, Potsdam College of S.U.N.Y., Potsdam, NY 13676 (315) 267-2259 or John Seyjagat, The Lube Foundation, 18401 N.W. County Rd. 231, Gainesville, FL 32609 (904) 485-1250.



*Institutions wishing to advertise employment opportunities are asked to send pertinent data by the 15th of each month to: Opportunity Knocks/AKE, 635 Gage Blvd., Topeka, KS 66606. Please include closing dates for positions available. There is no charge for this service and phone-in listings of positions which become available close to deadline are accepted. Our phone is 1-800-242-4519 (U.S.); 1-800-468-1966 (Canada). Our FAX is 913-273-1980.*

**ZOOKEEPER**...accepting resumes for full-time Keeper positions, BIRD (psittacines, cranes, waterfowl) and MAMMAL (ungulates, primates, cougars, cheetahs). Degree or equivalent zoo related experience. Daily duties include care, feeding, habitat upkeep, breeding programs, record keeping, medical coordination, training, acquisitions, etc. Must be willing to work weekends/holidays. Starting salary \$15,000-\$20,000 with year-end bonus and benefits. Excellent growth potential. Salary commensurate with experience. Send resume/references to: Washington Zoological Park, 19525 SE 54th, Issaquah, WA 98027. Positions open until filled.

**ZOO FOREMAN**...small central Florida Zoo is seeking employee to care for animal collection. Fifty-plus species, 100-plus animals -- jaguars, tigers, Florida panthers, crocodiles, primates, birds, others. Also will supervise laboratory students for new style zoo management school. One to two years experience required -- some basic handyman skills helpful. Salary \$7.50 per hour plus health insurance and paid vacation. Send resume to: Zoo Foreman, Box 2319, Belleview, FL 34421.

**SENIOR CARNIVORE KEEPER**...full-time keeper at wildlife park. Requires two year's experience, preferably with cheetahs. College coursework or degree desired. Send letter/resume to: Personnel Dept., Wildlife Safari, P.O. Box 1600, Winston, OR 97496.

**REPTILE KEEPER**...requires experience and working knowledge of care, maintenance and breeding of reptiles in captivity. Associate's degree in biology or related field and experience with venomous snakes desired. Salary \$16,455-\$20,026, with excellent benefits. Send resume to: Montgomery Zoo/County Personnel Department, Room 224, City Hall, Montgomery, AL 36111.

**ANIMAL TRAINER/SHOW PERSON**...to train and present North American animals in a daily contracted show at the San Diego Wild Animal Park. Experience required. We are looking for a self-motivated person familiar with operant conditioning techniques. Salary \$1280.00 - \$1440.00/month plus benefits. Send resume to: Rare & Wild Presentations, Inc., c/o David Nix, P.O. Box 987, Valley Center, CA 92082.

**PLAINS KEEPER/ELEPHANT HANDLER**...requires a basic understanding of animal training and its importance. Also requires the ability to accept direction and work as a member of the team in an extensive hands-on elephant program. Bird and mammal experience preferred. Must have interpersonal skills and be team oriented. High school degree required. Resume to: Richard M. Hurst, Indianapolis Zoo, 1200 W. Washington St., Indianapolis, IN 46222.

**VETERINARY TECHNICIAN**...must possess or be eligible for New York state licence. Will work with small but varied collection. Will assist in liaison for consulting veterinarian. Responsible for lab work, record keeping, and medical inventory as well as routine animal and exhibit care. Resume by 31 July to: Tim French, General Curator, Ross Park Zoo, 185 Park Ave., Binghamton, NY 13903.

**ZOO KEEPER**....requires high school diploma and 1 year previous experience working with exotic animals. Venomous snake experience preferred. Will initially rotate to all areas of the zoo. Send resume and three references by 1 August 1993 to General Curator, Pueblo Zoo, 3455 Nuckolls Ave., Pueblo, Co 81005. Phone: (719) 561-8686.

**ZOOKEEPER** ...the North Carolina Zoological Park is now accepting resumes for approximately 30 positions (Keeper I and Keeper II) as part of a \$32 million North American Continent expansion project. Positions will be filled in an on-going basis from July '93 - January '94 for openings in Rocky Coast, Cypress Swamp, Sonora Desert, Carolina Streamside and North American Plains Habitats, as well as a contact area. A 4-year degree in zoology or a related field is preferred for both Keeper I and II positions. Two years of zoo experience or an equivalent combination of education and experience is required for Keeper II positions. At least one year experience in one or more of the following specialty fields is desired: North American ungulates, carnivores, small mammals, pinnipeds, puffins, reptiles, amphibians and fish. Starting salary \$16,000 - \$17,000 plus benefits. Send resume and cover letter to: Elly Walters, Animal Division, North Carolina Zoological Park, Rt. 4, Box 83, Asheboro, NC 27203.





# AAZK Membership Application

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- \$40.00 International  
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- \$20.00 Library  
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Mail this application to : AAZK Administrative Offices, Topeka Zoo, 635 S.W. Gage Blvd., Topeka, KS 66606-2066 U.S.A. Make checks/money orders payable to AAZK, Inc. Must be in U.S. FUNDS ONLY.

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# Animal Keepers' Forum

August 1993



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**AAZK PUBLICATIONS : CONTINUING DATA COLLECTION**  
Zoo Infant Development Project - Harmony Frazier-Taylor, Woodland Park Zoo  
Diet Notebook, Mammals, Vol. II - Susan Bunn Spencer, Bronx Zoo

## Table of Contents

|   |             |
|---|-------------|
| Scoops & Scuttlebutt.....   | 262 - 263   |
| Coming Events/Keepers' Alert.....   | 264 - 265   |
| Births & Hatchings.....   | 266         |
| From the President (Proposed By-law Revisions/Proxy Ballot).....  | 268 - 269   |
| An Open Letter to the Membership.....   | 270 - 271   |
| Rescuing Orphaned Gorillas in the African Congo/Publications Available.....   | 271 - 272   |
| AAZK Board Overseers: Who are they and what are their responsibilities?.....  | 274         |
| Temporary Separation of a Juvenile Golden-lion Tamarin from the Family.....   | 275         |
| Good and Bad News For Rhinos.....   | 276         |
| Golden Dunes and Desert Mountains (Anna Merz new book Order Form).....  | 277         |
| Legislative Outlook (NAFTA/Wolf Reintroduction).....  | 278         |
| Enrichment Options (Tamarins, Keas, Guenons, Capuchins).....  | 279 - 280   |
| Elephant Set - Internal Diseases, Part III.....   | 281 - 283   |
| Vietnamese 'Mystery' Mammal Gets Name.....  | 283 - 284   |
| Chapter News.....   | 284 - 285   |
| Connections.....  | 286 - 287   |
| Viewpoint - Death Does Not Take A Holiday.....  | 288 - 290   |
| AAZK Announces New Professional/Contributing Members.....   | 290         |
| Scientific Research to be Reorganized Under National Biological Survey.....   | 291 - 293   |
| Book Review (Birds of South America, Vol. 1, The Oscine Passerines).....  | 294         |
| L.I.N.K. List of Regional Coordinators.....   | 295         |
| Opportunity Knocks.....   | 296         |
| Conference '93 Atlanta (Pre- and Post-Conference Trip Information, Registration and Hotel Forms,<br>Airline Information and Final Call for Papers)..... | GOLD INSERT |

### Information for Contributors

Animal Keepers' Forum publishes original papers and news items of interest to the animal keeping profession. Non-members are welcome to submit articles for consideration.

Articles should be typed or hand-printed and double-spaced. All illustrations, graphs, charts and tables should be clearly marked, in final form, and should fit in a page size **no greater than** 15cm x 25 1/2cm (6" x 10"). Literature used should be cited in the text (Brown, 1986) and alphabetically in final bibliography. Avoid footnotes. Include scientific name of species (as per ISIS) the first time it is used. Thereafter use common name. Use metric system for weights and measurements (standard equivalents may be noted in parenthesis). Use the continental dating system (day-month-year). Times should be listed as per the 24-hour clock (0800, 1630 hrs. etc.) Black and white photos only are accepted. Color slides should be converted to black and white prints (minimum size 3 x 5 inch) before submission. Clearly marked captions should accompany photos. Please list photo credit.

Articles sent to Animal Keepers' Forum will be reviewed by the editorial staff for publication. Articles of a research or technical nature will be submitted to one or more of the zoo professionals who serve as referees for AKF. No commitment is made to the author, but an effort will be made to publish articles as soon as possible. Lengthy articles may be separated into monthly installments at the discretion of the editor. The editor reserves the right to edit material without consultation unless approval is requested in writing by the author. Materials submitted will not be returned unless accompanied by a stamped, self-addressed envelope. Telephone or FAX contributions of late-breaking news or last-minute insertions are accepted. However, long articles must be sent by U.S. mail. The phone number is (913) 272-5821 Ext. 31.

### DEADLINE FOR EACH EDITION IS THE 15TH OF THE PRECEDING MONTH

Articles printed do not necessarily reflect the opinions of the Animal Keepers' Forum editorial staff or the American Association of Zoo Keepers, Inc. Publication does not indicate endorsement by the Association.

Items in this publication may be reprinted providing credit to this publication is given and a copy of the reprinted material is forwarded to the editor. Reprints of material appearing in this journal may be ordered from the editor. Back issues are available for \$2.00 each.

This month's cover features the Common Squirrel Monkey (*Saimiri sciureus*) drawn by Camille Dorian, a keeper at Monkey Zoo in Orinda, CA. These lively primates are native to South and Central America and are found in groups of up to several hundred. Their long tails (measuring up to 40 cm) are not prehensile. They live high in the crowns of tropical forest trees eating a varied diet including fruits, berries, nuts, tree frogs, snails and insects. Squirrel monkeys display to their conspecifics by standing upright, spreading their legs and displaying their genitalia. Even young juveniles display this behavior to determine their social ranking within the group. Thanks, Camille!

# Scoops and Scuttlebutt

## Openings Still Available on Conference '93 Program

The Atlanta Conference Program Committee has advised AO that there are still slots open for those wishing to present papers or poster sessions at the 1993 AAZK National Conference (Oct. 10-14, 1993). If interested, you should send or FAX your abstract ASAP to: Craig Piper or Sue Barnard, Program Committee, 1993 AAZK Conference, Zoo Atlanta, 800 Cherokee Ave. SE., Atlanta, GA 30315 FAX (404) 627-7514. Papers are limited to 15 minutes in length with a 5 minute question/answer period. Abstracts should include the name of presenter, Zoo affiliation, title of paper, proposed format (paper, poster, workshop), and AV equipment needed (projector, video, overhead). All presenters who submit a correctly formatted manuscript for publication receive a gratis copy of the Conference Proceedings.

## San Diego AAZK Chapter Donates to AAZK Publications

The San Diego AAZK Chapter has graciously donated \$500.00 towards the publication costs of the Zoo Infant Development Project Notebook (Mammals) and a similar amount towards the next anticipated printing of the Diet Notebook - Mammals, Vol. II. These funds come from the profits realized by the Chapter from hosting the 1993 AAZK National Conference. The Board of Directors and the staff at Administrative Offices would like to thank all San Diego Chapter members for this generous contribution which will help ensure the continuation of important and useful reference works for the entire zoological community.

## Fundraising Survey Thank-Yous

*-submitted by Teri Maas, Philadelphia Zoo AAZK*

I would like to thank the following Chapters and institutions for taking the time to complete the Chapter Fundraising Surveys:

|                      |                        |                            |
|----------------------|------------------------|----------------------------|
| Fucson AAZK          | Detroit AAZK           | Zoo Atlanta AAZK           |
| Platte River AAZK    | Brookfield AAZK        | Indianapolis Zoo AAZK      |
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| Rocky Mountain AAZK  | Greater Cleveland AAZK | Chahinkapa Zoo Association |

Thanks to all who sent information !!! I am still looking for info on garage sales, bake sales, recycling, wishing wells, photo booths, raffles, auctions and anything else that makes money. Compiled information will eventually be made available to all AAZK Chapters. Remember, this project may help you in the future! Look in the May 1993 AKF for the survey form or request one from the AKF Editor. Thank you.

## Scoops & Scuttlebutt, *Continued*

### ESP Conservation Parking Meter Receives National Recognition

The Ecosystem Survival Plan and its Conservation Parking Meter Program received national recognition in the form of a Certificate of Environmental Achievement awarded by the National Environmental Award Council. The project will be listed in the RENEW AMERICA's Environmental Success Index as a model program for others.

The Ecosystem Survival Plan continues to grow at an exciting pace. Currently, the program consists of 151 Conservation Parking Meters which have raised more than a quarter of a million dollars for rainforest conservation. For more information please contact: Norm Gershenz, ESP Program Director, c/o San Francisco Zoo, 1 Zoo Road, San Francisco, CA 94132 (415) 733-7052. --submitted by Rosemary Krussman, ESP Associate

### Chapter Logo Project Update Planned

All Chapters are requested to submit a sharp, clear copy of their logo to the Administrative Offices for inclusion in the Chapter Logo Registry Update. We realize that many Chapters have submitted logos in the past, but we want to ensure that all logos in the update are **current** so we ask that all Chapters send this logo information. Also please include the name of the artist who designed the logo and the year the logo was officially adopted by the chapter. Also, if there is a particular significance as to why the animals or design on the logo was selected, please include this information. We hope to put out the new Chapter Logo Registry by early '94 so we would request that logos be sent by **1 December 1993**. Chapters will receive a copy of the updated Chapter Logo Registry upon its completion. Send to: Logo Registry, c/o AAZK, 635 SW Gage Blvd., Topeka, KS 66606-2066.

### Des Moines Zoo Remains Dry Despite Severe Flooding

We have received a number of calls here at AO concerning the status of the Blank Park Zoo in Des Moines, IA. While national T.V. newcasts on Des Moines reported severe flooding in that city, the zoo has fortunately remained directly unaffected by flood waters. In a telephone conversation with Monica Watson, Education Coordinator, it was learned that the Blank Park Zoo, which is a seasonal facility housing approximately 1000 specimens of 100 species and employing a full-time staff of 30, was closed to the public due to lack of water for public restrooms. There is no flooding on the grounds and because the zoo's parking lot is a water distribution center for the city, they have had no shortage of drinking water for the animals. Exhibit cleaning has had to be somewhat modified, although Monica noted that they have few exhibits which have to be hosed out on a daily basis. The only animal-related problem had been the seal/sea lion pool which is normally flushed and cleaned twice a week. As of the date of our phone conversation (7-15-93), it had been a week since it was cleaned, but the staff anticipated having water for refilling the pool on 7-19-93 and would be carefully monitoring the water for any problems. According to Monica none of the zoo staff had suffered any personal losses due to the flooding. She also expressed her appreciation for the concern shown for the Blank Park Zoo animals and staff by keepers across the U.S. ---Susan Chan, AKF Editor

### **ATTENTION ALL MEMBERS !!**

**As National Conference time approaches, you are reminded that if you have a proposal, question or concern which needs to be addressed by the Board of Directors or at the General Membership Meeting, such requests need to be submitted in writing prior to the Conference. All positive and constructive input by members is welcomed and we encourage your participation in the affairs of your Association. Please send your ideas, questions, concerns or proposals to: Ed Hansen, AAZK President, Reid Park Zoo, 1100 S. Randolph Way, Tucson, AZ 85716 FAX 602-791-5378. Send no later than 10 September 1993.**



# Coming Events

## The Mid-Atlantic Reptile Show

September 25-26, 1993

Baltimore, MD

Sponsored by the Maryland Herpetological Society, all proceeds from this show will go to the Ecosystem Survival Plan for purchase of rainforest land in Costa Rica. Show will feature captive born reptiles only, speakers and lectures as well as herpetological accessories and books. Keynote Speaker is Dr. Roger Conant. For further information contact : Tim Hoen, Johns Hopkins University, Jenkins Hall/Biophysics, 34th and Charles St., Baltimore, MD 21218 - (410) 557-6879.

## 11th Annual Association of Zoo Veterinary Technicians Conference

Oct. 5-9, 1993

St. Louis, MO

To be held at the St. Louis Zoological Gardens. For more information contact: Barbara Jenness, St. Louis Zoo, One Government Dr., St. Louis, MO 63110 (314) 781-0900 or Virginia Crossett, Louisville Zoo, P.O. Box 37250, Louisville, KY 40233 (502) 459-2181.

## 1993 Annual Meeting of the American Association of Zoo Veterinarians

October 10-15, 1993

St. Louis, MO

Special sessions will include government regulations, zoo veterinarian's role in conservation programs, medicine of Australasian species, and group medicine and herd health. Other program sections will include pathology, parasitology, clinical pathology; reproductive technology and contraception, immobilization, anesthesia and monitoring; case reports, exotic pets and practice tips, reptiles and amphibians; primates, carnivores and small mammals; avianspecies; and aquatic animals. Scheduled workshops include comprehensive pest control programs, occupational health and safety, endoscopy, ophthalmology, and basic zoo animal medicine. Individuals interested in submitting a manuscript should contact Donald Janssen, DVM, San Diego Zoo, P.O. Box 551, San Diego, CA 92112 - Phone (619) 557-3933; FAX (619) 557-3959. For other conference information contact Wilbur Amand, DVM, AAZV Executive Director, 3400 Girard Ave., Philadelphia, PA 19104-1196; phone (215) 387-9094; FAX (215) 387-8733.

## The 16th Annual IWRC Conference

October 14-17, 1993

Lake Tahoe, NV

Theme: Wildlife Rehabilitation: A Perpetual Learning Process. Will include Skills Seminars on Basic Wildlife Rehabilitation IAB and an Advanced Skills Seminar on Gross Pathology & Clinical Pathology. Also includes a field trip to Lake Mono and a day trip to Virginia City. Paper topics will cover administration/education, avian, mammals, reptiles and veterinary medicine. There will also be hand-on workshops on such topics as making raptor hoods and basic necropsies, and round table discussion groups. For more information contact IWRC at (707) 864-1761 M-F 9 a.m.-4 p.m.

## National Symposium on Urban Wildlife

October 22-26, 1993

Seattle, WA

Organized by the National Institute for Urban Wildlife, the symposium will focus the attention of urban planners, landscape architects, developers, city administrators, natural resource biologists, elected officials, and others on the opportunity & need for wildlife and nature conservation in metropolitan America. For further information contact Dr. Lowell Adams, National Institute for Urban Wildlife, 10921 Trotting Ridge Way, Columbia, MD 21044 (301) 596-3311. To be held at Embassy Suites Hotel, Seattle-Bellevue, WA.



## Coming Events, *Continued*

### International Marine Animal Trainers Association 21st Annual Conference

November 7-12, 1993

Kailua-Kona, HI

Hosted by Dolphin Quest and headquartered at the King Kamehameha Hotel on the big island of Hawaii. For further information contact Julie Scardina-Ludwig, 1st Vice Pres., c/o Sea World of California, 1720 S. Shores Road, San Diego, CA 92109.

### Second National Watchable Wildlife Conference

November 11-13, 1993

Corpus Christi, TX

Co-sponsored by 13 private, State and Federal conservation agencies/associations, this conference aims at promoting watchable wildlife as an important conservation goal. Will include speakers, panel discussions, interactive sessions and optional field trips including visits to Aransas National Wildlife Refuge and Padre Island National Seashore. For further information contact National Watchable Wildlife Conference at 400 Mann, Suite 909, Corpus Cristi, TX 78401.

### International Conference on Orang-utans: The Neglected Ape

March 5-8, 1994

Fullerton, CA

An International Conference on Orang-utans: The Neglected Ape will be co-hosted by the California State University, Fullerton; the Zoological Society of San Diego; and the Atlanta/Fulton County Zoo Inc. Paper and poster presentations are scheduled for 5-7 March, in Fullerton, CA, followed by a post-conference trip to the San Diego Zoo on 8 March, with attendees participating in workshops and tours. For registration information and abstract guidelines, please contact: Norm Rosen, Dept. of Anthropology, California State University, Fullerton, CA 92634-9480, FAX: 310-798-0576.

### 1994 AAZPA Regional Conferences

**6-8 March 1994** - Central Regional Conference. For more information, contact Donna Chain, Oklahoma City Zoo, 2101 N.W. 50th St., Oklahoma City, OK 73111 (405) 424-3344.

**20-22 March 1993** - Southern Regional Conference. For more information, contact Beverly Rutland, Montgomery Zoo, P.O. Box ZEBRA, Montgomery, AL 36109 (205) 240-4900.

**10-12 April 1993** - Western Regional Conference. for more information, contact Jean Miller, Micke Grove Zoo, 11793 North Micke Grove Road, Lodi, CA 95240 (209) 953-8840.

**17-19 April 1993** - Great Lakes Regional Conference. For more information, contact Carol Pedersen, Blank Park Zoo, 7401 S.W. 9th St., Des Moines, IA 50315 (515) 285-4722.

**1-3 May 1993** - Northeastern Regional Conference. For more information, contact Troy Stump, ZOOAMERICA, North American Wildlife Park, 100 West Hersheypark Dr., Hershey, PA 17033 (717) 534-3862.



## ***Keepers' Alert***

We are looking for Zoo Keepers interested in participating with the Chirapteran TAG subcommittee on Keeper Projects. We are compiling a list of Keepers working with bats or who are interested in bats. The subcommittee will be promoting research projects and assisting with the compiling and disseminating of information on husbandry, management, nutrition, identification, etc. on bats. Please contact: Scott M. Heinrichs c/o Lincoln Park Zoo, 2200 North Cannon Dr., Chicago, IL 60614 OR Kim Tropea, 33 Teamter Lane, Levittown, NY 11756 (516) 579-9749.

# Births & Hatchings



Chevenne Mountain Zoo (Colorado Springs, Co)...reports the following significant B&H for June 1992 - June 1993:

**Mammals** - 0.0.2 Golden lion tamarin (*Leontopithecus rosalia rosalia*) [E] [0.0.2 DNS due to cannibalism]; 1.1 Goeldi's monkey (*Callimico goeldi*) [E/SSP] [0.1 rejected and pulled for hand-rearing - 1.1 DNS]; 1.2.1 Colubus (*Colobus guereza kikuyuensis*) [0.1 pulled for hand-rearing/reintroduced]; 1.0.1 Black and white ruffed lemur (*Lemur v. variegatus*) [E/SSP]; [1.0 DNS]; 0.1 Lowland gorilla (*Gorilla gorilla gorilla*) [E/SSP] [pulled for hand-rearing - dam would not allow infant to nurse]; 0.1 Mandril baboon (*Papio sphinx*) [E]; 1.0.1 Lion-tailed macaque (*Macaca silenus*) [E/SSP] [1.0 DNS]; 0.0.3 Black howler (*Alouatta caraya*) [T]; 0.2 Grevy's zebra (*Equus grevyi*) [T/SSP]; 0.0.9 Naked mole rats (*Heterocephalus glaber*) [U] [0.0.2 DNS]; 2.0.9 Black-footed ferret (*Mustela nigripes*) [E/SSP] [0.0.9 DNS]; 0.0.2 Red panda (*Ailurus f. fulgens*) [SSP].

The Philadelphia Zoo (Philadelphia, PA)...reports the following significant births and hatchings for January-June 1993:

**Mammals** - 3.0 Six-banded Armadillo (*Euphractus sexcinctus*) [DNS - this is the sixth litter for the dam with no young being successfully reared. Typically the young are neglected or cannibalized within 48 hours. 1.0 born in April did survive for two weeks before trauma and maternal neglect became a problem. In the future the young will be pulled for hand-rearing]; 0.0.2 Rodrigues fruit bat (*Pteropus rodricensis*) [E, CITES II]; 0.0.2 Lesser red panda (*Ailurus fulgens fulgens*) [0.0.1 DNS] [E, CITES II]; 0.0.2 Red kangaroo (*Macropus rufus*) [T]; 1.0.3 Vampire bat (*Desmodus rotundus*) [ENS - the colony reached 19 animals and we began losing infants as well as 3 adult females. We attributed some of the problem to aggression, possible contamination of food supply. Other causes are still being investigated.]; 0.0.1 Egyptian fruit bat (*Rousettus aegyptiacus*) [DNS - stillborn]; 0.1 Lowland gorilla (*Gorilla g. gorilla*) [E/SSP, CITES I]; 1.0.1 Pygmy marmoset (*Callithrix pygmaea*) [DNS 1.0 due to trauma from cagemate, 0.0.1 due to neglect dam not lactating] [E]; 0.1 Blue duiker (*Cephalophus monticola bicolor*) [first birth since 1983. Infant needed to be bottle-fed due to maternal neglect, but was able to remain with the group.] [CITES II].

**Birds** - 0.0.2 Magpie tanager (*Cissopis leveriana*) [0.0.1 DNS - and the other is being hand-reared. We are the only institution reporting to ISIS that holds this species.]; 0.0.1 Coccoroba swan (*Coccoroba coccoroba*) [DNS due to yolk toxicity] [CITES III]; 0.0.1 Humboldt penguin (*Spheniscus humboldti*) [DNS, CITES I]; 0.0.1 Hermit ibis (*Geronticus eremita*) [DNS/E]; 0.1.2 Micronesian kingfisher (*Halcyon cinnamomina*) [E/SSP]; 0.0.1 Caribbean flamingo (*Phoenicopterus ruber*) [CITES I]; and 0.0.3 Whooper swan (*Cygnus c. cygnus*) [currently being hand-reared.] --submitted by Sandra Robbins, Chapter Liaison.

John Ball Zoo (Grand Rapids, MI)...the River City AAZK Chapter reports the following significant B&H from January-present:

**Mammals** - 0.3 Maned wolves (*Chrysocyon brachyurus*) [T/SSP]; 3.0 North American river otter (*Lutra canadensis*); 0.0.1 Common marmoset (*Callithrix jacchus*) [T]; 1.1 Red-bellied white-lipped tamarin (*Saguinus labiatus*) [T]; 0.1 Burchell's zebra (*Equus burchelli*).

**Birds** - 0.0.1 Bald eagle (*Haliaeetus leucocephalus*) [T]. submitted by Amy Harris.



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# **Message From the President.....**

## **proposed By-law Revisions**

During early 1993, the By-laws Committee was directed by the AAZK Board to review the ratified by-laws of our Association with an eye towards writing them in plain English and removing the various stringent policies that have been put into place during the past few years. The Board of Directors will then create an Administrative Directory, listing the Association's policies, helping Chapters and members in becoming familiar with specific rules of operation. The By-laws will revert to what they are intended to represent - the governing laws of this Association. The draft formulated by the Committee was reviewed by the Board during the mid-year meeting.

With a few exceptions, detailed below, the Committee and the Board have recommended little change to the existing By-laws. The major difference will be in the language of the text. It will be simpler and easier to read.

To minimize the expense associated with membership notification of by-law changes, AAZK legal counsel has advised that printing, publication and mailing of 2700+ by-laws to the membership can be dispensed. This will serve as your 45-day written notice regarding by-law revisions. If you are interested in receiving a copy of the proposed language changes to the existing by-laws, please send a stamped (52¢) self-addressed envelope to the Administrative Offices and they will be glad to send you a complete copy.

Actual changes in the text, other than those translated into plain English are as follows:

### **Article II** **Officers and the Board of Directors**

#### **Section 1. Board of Directors**

The affairs of the Association shall be managed by an elective Board of Directors consisting of two (2) officers and five (5) other members. The officers shall be the President and Vice President. The Immediate Past President shall serve as *ex-officio* member of the Board without the right to vote and shall serve as the Secretary to the Board of Directors. The President of the Association shall be elected by Executive Committee appointed by the Board of Directors in a policy detailed in the Administrative Directory of the Association.

#### **Section 2. Term of Office.**

(existing text)...Each member of the Board of Directors shall serve from the conclusion of the annual Business Meeting following their election. No elected Board Member shall serve more than two (2) consecutive terms.

### **Article IV** **Membership**

#### **Section 1. General Requirements.**

(existing text)...The Board of Directors shall charge the Administrative Secretary of the Association with the responsibility of reviewing applications for the membership categories of Professional, Affiliate and Associate. Membership is subject to approval by the Board of Directors.

#### **Section 2. Membership Categories.**

Professional: Permanent, salaried full-time or part-time (as defined in the Administrative Directory) zoo or aquarium keepers, veterinary technicians, research technicians (existing text)...

### **Article V** **Termination and Suspension**

#### **Section 1.**

The Board of Directors may, for cause, suspend or terminate any membership in any classification, or Chartered Chapter, by a majority vote. All charges, with the exception of chapters failing to recharter, will be forwarded to the Ethics Committee for review.

**Message from the President - Proposed By-law Revisions**, *Continued*

As you can see, the amendments, as further detailed in the Mid-year Meeting Report to the Membership (June issue, p. 196), are straight forward. Again, if you wish a copy of the complete language revisions, please mail AO a letter of request with a return self-addressed, postage-paid envelope, and we will be happy to fill your request. Thank you for your cooperation. Below is a proxy ballot which may be used if you wish to vote on the by-law amendments and will not be in attendance at the Atlanta National Conference.

Ed Hansen  
AAZK President  
Reid Park Zoo, Tucson, AZ

## PROXY

(Professional and Affiliate Members Only May Vote - Membership status will be verified at Administrative Offices)

The AAZK Board of Directors and the AAZK By-laws Committee recommend the adoption by the membership of the proposed revisions to the By-laws of the Association. They will be voted on at the General Membership Meeting to be held at the Atlanta Conference Oct. 10-14, 1993. If you will not be in attendance, you may return this proxy ballot to let your wishes be known. **CHOOSE ONE BELOW.**

I, the undersigned, do hereby designate Ed Hansen, President, as my Proxy at the 1993 General Membership Meeting of AAZK. I wish my vote to be cast with the majority of members in attendance at the General Membership Meeting.

I, the undersigned, wish to vote against the following By-law revisions. (Please list below those revisions you wish to vote against.)

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Name \_\_\_\_\_

(Please Print)

Address \_\_\_\_\_

Signature \_\_\_\_\_

Date \_\_\_\_\_

MAIL TO: PROXY BALLOT, AAZK Administrative Offices, 635 S.W. Gage Blvd., Topeka, KS 66606-2066. Ballots must be postmarked no later than 1 October 1993.

## **An Open Letter to the Membership:**

The Toledo Chapter of the American Association of Zoo Keepers, Inc., has been a duly recognized and chartered Chapter of this Association for many years. The Toledo AAZK Chapter served as gracious hosts for the 17th National AAZK Conference in October of 1991. The Toledo Chapter/AAZK, Inc. was solicited to recharter in our Association during January of 1992. As per the Association's By-laws, two written notices of compliance were mailed and went unanswered. By unanimous vote of the Board of Directors/AAZK, Inc., the charter of the Toledo Chapter AAZK, Inc., was revoked on 1 March 1992.

All attempts to communicate with former Chapter members, including personal phone calls from myself, certified and regular mail, regarding the disposition of funds and assets from the Chapter account, were ineffective. Negotiations with Toledo Metro Federal Credit Union resulted in the remaining funds of \$358.00 being transferred to the Conservation, Preservation and Restoration budget of the Association, as per our By-laws, with all remaining assets liquidated responsibly on advice of legal counsel.

In reviewing materials provided by the Toledo Metro Federal Credit Union regarding the finances of the Chapter, it was determined by the Board of Directors and staff that very few expenses regarding the Conference were detailed on the account. As no conference report was ever filed by the Chapter, the decision was made by the Board to investigate the existence of a separate bank account. This investigation revealed the existence of one bank account entitled the Toledo Chapter/AAZK Conference Account, held with People's Saving Bank of Ohio, which was never reported to the Association as required by the Association By-laws and the Internal Revenue Service. It was determined that all accounts regarding the Conference were settled by the conclusion of 1991 and a balance of approximately \$4600.00 remained in this account, with little yearly activity, until October of 1992. As per the ratified By-laws in place at the time, 50% of this figure (i.e. funds remaining after conference expenses had been met) was the property of the National Association.

On 13 October, 1992, a deposit of \$200.00 was credited to the account and on October 15, 1992 a check in the amount of \$4613.34 was issued to the Ngare Sergoi Rhino Preserve, and co-signed by two of the original account signatories. At the time this check was signed neither individual was a Chapter officer nor a member of our Association. Following a speaking engagement in Toledo in October of 1992, the check was presented on behalf of the Toledo Chapter to Anna Merz and credited to the account of the Ngare Sergoi Support Group, Inc.

Our By-laws regarding Chapter dissolution, as mandated by the IRS, are very specific with regard to disbursement of accounts. Upon dissolution of a Chapter, all remaining funds become the property of AAZK, Inc. It had earlier been determined by the Board and By-law amendment that such funds are distributed through the CPR Committee of AAZK to fund keeper-initiated conservation projects. In addition to 50% of the Conference revenues held in the account, upon Chapter charter revocation all remaining monies became the property of AAZK, Inc. Quite simply, no matter where the money went or the worthiness of the cause to which it went, it was not the former Chapter's money to give away.

The Toledo Chapter/AAZK, Inc., violated numerous Association By-laws which I have detailed for you. When former members of the Association signed a check to draw money from an Association account, a serious breach of trust occurred. The AAZK Board of Directors has, however, elected not to file criminal charges or take other legal recourse.

In order to avoid further complicated proceedings that would damage the effectiveness of our Association, deplete our funds and distract from the progress we have made in the past two years, I have asked Andy Lodge and the Ngare Sergoi Support Group, Inc., to return the funds to the rightful owner. He has graciously agreed to comply. The retrieval of these funds is not meant to penalize a fine conservation organization and the tremendous work that NSSG, Inc. does on behalf of rhinos and endangered African ecosystems, but is an effort on behalf of the Boards of Directors to act legally and responsibly on behalf of the membership.

## An Open Letter to the Membership. *Continued*

The intent of this letter is to provide the membership with details regarding the By-law violations by the Toledo Chapter and the circumstances of the Board's action regarding this matter. Any further inquiries or comments may be directed to me at the address listed below.

Respectively,



Ed Hansen  
AAZK President  
Reid Park Zoo  
1100 S. Randolph Way  
Tucson, AZ 85716



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## Rescuing Orphaned Gorillas in the African Congo

*Reprinted from International Zoo News, No. 244, Vol. 40/3, April/May 1993  
and originally adapted from Ken Wells, The Wall Street Journal - Europe (25 March 1993)*

In years past in the central African nation of the Congo, hundreds of young lowland gorillas ended up on the black market, sold as pets by poachers who first killed their mothers for sport or food. But thanks to recent gorilla protection laws adopted by the Congolese government, and to the efforts of the Gorilla Orphanage Project, the species faces a more promising future. At the moment, the orphanage cares for 20 gorillas in a wooded 20-acre compound tucked behind the leafy grounds of Brazzaville Zoo. They trickle in at a rate of about one a month, rescued by wardens armed with a law that allows on-the-spot confiscation of any gorilla offered for sale.

By late summer, a number of them will trickle out again into the Congo's forests. In a cooperative project between the Congo and the orphanage's British sponsor, John Aspinall's Howletts and Port Lympne Foundation, the first six will be released into a remote, 300-square-mile government-owned reserve being established 200 miles north of Brazzaville. Hemmed in on two sides by rivers and protected by rangers and fences, the reserve will offer a chance for gorillas who have escaped their captors to escape a life of cages as well. The mission of the orphanage, begun in 1989, is to make the transition as smooth as possible. But it is not that easy - when the gorillas arrive, they are often sick and malnourished; many have seen their mothers shot and have been ill-treated by their captors that 'it takes them many weeks to adjust to their human benefactors,' says Mark Attwater, who joined the orphanage four years ago after a decade working with captive gorillas in Britain. Until they are about a year old, many of the babies requires 24-hour care - night-time bottle feedings with diluted baby formula, and plenty of hugs, body contact and reassurance.

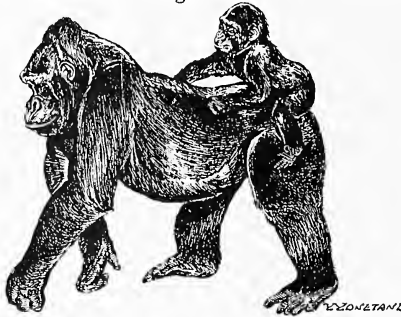
Their physical needs met, the orphans are eased into 'school', teamed up with other gorillas of similar age and taken to the forest under the tuition of Albertine N'Dokila, a young Congolese woman with training in primate behavior. With her they learn the survival and

## Rescuing Orphaned Gorillas in the African Congo, *Continued*

social skills that wild gorillas acquire naturally. Ms. N'Dokila's role is in part to suggest possibilities - for example, urging her charges up a tree of suitable size and shape to support the sleeping nests common to young wild gorillas.

The Orphanage grew out of an appeal five years ago to John Aspinall for help in providing homes for Congo gorillas rescued by private citizens. He agreed to accept a few Congo orphans into his animal parks in England. But expense and red tape - it is technically illegal to import gorillas, even orphaned ones - made it clear that a site in the Congo was the only realistic solution. His foundation has spent about one million pounds (\$1.5 million) so far to build and maintain the orphanage; it will spend another £650,000 (\$1 million) building roads, ranger stations and staff facilities for the gorilla reserve.

Assuming that the first band of gorillas adapts to the reserve, others will follow. Over time, the goal is to reduce the role of the orphanage to a temporary holding facility to nurse confiscated gorillas back to health. There are no gorillas in the reserve now; it would be too dangerous, for health reasons, to place orphans, with their exposure and susceptibility to human diseases, with wild gorillas. The reserve will also become a center for primate study, as well as a pocket of tranquility for a species whose numbers are steadily shrinking. An estimated 10,000 to 45,000 lowland gorillas still roam central Africa (by contrast, the endangered mountain gorilla has dwindled to perhaps 400 animals); but the lowland subspecies is under constant pressure as forests disappear, cities crowd its habitat and hunting intensifies across much of its range.

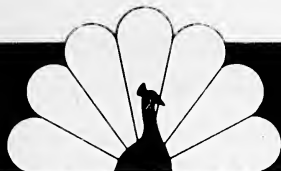


## Publications Available

1993 Global Zoo Directory - published by the IUCN/SSC Captive Breeding Specialist Group in collaboration with the International Species Inventory System and International Zoo Yearbook, this volume contains a Directory of the Zoos of the World, Regional Conservation Coordinators, International Studbook Listing, Regional Studbook Listing, Species Programs, Taxon Advisory Groups, Conservation Assessment and Management Plans (CAMPs), SSC Specialist Groups, SSC Action Plans, SSC Specialist Group Addresses, CBSG Member Addresses. Price is \$35.00 (U.S. Funds only) made payable to CBSG and sent with request to: 1993 Global Zoo Directory, CBSG, 12101 Johnny Cake Ridge Road, Apple Valley, MN 55124-8151, USA. Payment is also available by VISA credit card--send card holder name, card number, expiration date and card holder's signature.

The Hidden Life of Dogs - by Elizabeth Marshall Thomas, this book is the culmination of a 12-year study of dogs, wolves and dingoes by the author. Dogs and humans have shared life for 20,000 years, yet we humans understand very little of what dogs are, how they think. Do they fantasize? Do they dream? How do they communicate in a group? What do their barks, whines and growls tell other dogs? These are a few of the areas explored in this book which is rich with humor and feeling but presents an entirely new way of looking at dogs without being anthropomorphic or sentimental. Includes drawings by Jared T. Williams. Cost is \$17.95 and is available at your local bookstore or through Houghton Mifflin Cp., 215 Park Ave. South, New York, NY 10001.





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# AAZK Board Overseers: Who are they and what are their responsibilities?

This is another overview of the responsibilities of each member of the AAZK Board of Directors. The Board overseer is essentially the manager of the committees assigned, and sees to the best interest of the AAZK. This month we'll review the responsibilities of Board Member Ellen Bradfield, Animal Program Coordinator, Zoo Atlanta Education Department, Atlanta, GA.

## Public Education Committee

Chair: Elaine Puzo, Newark Museum Mini Zoo

Committee members: Nancy Biggins, Arizona-Sonora Desert Museum  
Sherri Levitt, Houston Zoological Gardens

The PEC grew out of the Keeper Education Committee in order to address the need for public awareness of AAZK, zoos, and their respective roles in conservation. In addition, this committee strives to assist the zookeeper in presenting this information to the public by developing educational materials. Some of the current projects include a Zoo Keeping Poster, and an AAZK Membership Information Display.

## Zoo/University List

Chair: Michael Illig, Metro Washington Park Zoo

This is a listing of colleges and universities having programs or courses relating to animal care and research. It has been an ongoing service since 1984, and can be a valuable resource for the AAZK membership. Copies of the list may be obtained by contacting Administrative Offices (AO).

## Keeper Accommodations List (KAL)

Chair: VACANT

This service provides a list of keepers or other AAZK members who are willing to put up a fellow keeper for one or more nights. This list was started late in 1979 with several aims, primarily to help provide inexpensive accommodations for traveling keepers. This project also promotes contact among keepers, fellowship in the AAZK, and information exchange at the keeper level. If you are interested in the Chair position please contact AO.

## Staff Exchange

Chair: Dale Frerking, Kansas City Zoo

The Staff Exchange is another membership service that AAZK is proud to offer. It provides basic resource materials with information helpful to persons interested in pursuing a reciprocal exchange with an employer in another zoological institution, or alternately, a working visit to another facility. Nearly 70 North American (and several foreign) institutions have become a part of this network. An institution that registers with this service is under no obligation to participate in any exchange or visit. The Staff Exchange service is for information and assistance only.

## Zoo Infant Development Project

Chair (Mammals): Harmony Frazier, Woodland Park Zoo

Chairs (Birds): Teri Maas and Maggie Liguori, Philadelphia Zoo and  
Kim Livingstone (Passerines only), San Diego Zoo

Chairs (Reptiles/Amphibians): Jeanne Bocconcelli, Newark Museum Mini Zoo and  
Linelle Lone, Denver Zoo

The purpose of this project is to collect information on parent-reared infants in captive collections. The information will be compiled into a notebook that can then be used as a reference for the physical and behavioral development of normal parent-reared captive specimens. The Mammal volume is expected to be published by October for the National Conference in Atlanta. This volume will contain over 400 records representing over 100 species. The AAZK Board is very happy to provide the membership with another excellent publication. Anyone with any information they would like to contribute to the project should contact the appropriate chair(s).



# Temporary Separation of a Juvenile Golden-lion Tamarin from the Family Due to Infant Directed Aggression

By  
*Kathy Wassel and Scott Race*  
*Utica Zoo, Utica, NY*

On 14 September 1992, the Utica Zoo's pair of Golden-lion tamarins (*Leontopithecus rosalia rosalia*) gave birth to 1.1 offspring. At this time, the exhibit housed the breeding pair and their seven-month-old female offspring (Hannah). These infants were the third set of twins produced by this pair since they were introduced in September 1990.

On 15 September one of the day-old infants (1.0) was found dead in the nestbox. Obvious signs of external trauma, such as bite wounds and fractures, were present. At this time the breeding female (Dame Diego) was carrying the infant but appeared to be highly stressed and very weak. On several occasions Hannah was observed acting aggressively toward the infant - jumping on the infant and trying to pull the infant from Dame Diego. Dame Diego made no attempt to protect the infant from this aggression. The infant was observed nursing only twice between 0900 hrs and 1600 hrs. The behavior of the juvenile supported the assumption that she was the cause of trauma to the deceased infant and the cause of stress to Dame Diego.

It was determined that some form of intervention was needed to protect the remaining infant. Since tamarins learn parenting skills by observing and caring for younger siblings, there was the risk that pulling Hannah could be detrimental to her future breeding success since it would deny her the opportunity to learn appropriate parenting skills. Hand-rearing the infant would also have similar results. Because Hannah's actions appeared to be stressing Dame Diego, causing her to ignore the infant, and were potentially physically dangerous to the infant, the decision was made to remove Hannah from the group temporarily. At 1600 hrs on 15 September, the breeding pair and infant were locked into the exhibit, while the juvenile was locked into the holding cage. No visual contact was allowed.

From 16-18 September, Hannah was allowed in the exhibit with the group during the day, but continued to be separated at night. During the day she continued to be aggressive towards the infant, and the breeding female continued not to interfere.

On 18 September the breeding male (Sam) began carrying the infant. Hannah was still aggressive. She was observed preventing transfer of the infant to the breeding female for nursing by physically blocking the shifting. At this point it was decided that additional measures were indicated.

On the evening of 18 September, Hannah was locked into the holding cage. She was separated from the exhibit and nestbox by a mesh door. She remained separated until 22 September. During this time the breeding male carried the infant almost continuously. The breeding female was observed taking the infant for nursing. Repeated grooming by the male seemed to relax the female, and the female was observed resting frequently.

By 22 September, the breeding female appeared to be behaving normally; she was observed carrying the infant for times other than nursing and no longer appeared stressed. At this time the decision was made to reintroduce the juvenile. While Hannah did display some aggression toward the infant, both parents were observed reprimanding her. Over the next few days, aggressive behavior decreased in frequency. For several weeks the juvenile was separated out at night.

As of 1 June 1993, the infant (Eddi) appears to be healthy both physically and socially. Hannah is still in the group and has been observed playing with Eddi (now a juvenile) frequently, although she was observed carrying Eddi only once.

On 1 April 1993, the breeding female gave birth again. Due to problems with one of the infants, both juveniles were separated out from 5 April to 13 April. Although one of the infants died, both Hannah and Eddi were observed demonstrating appropriate parenting skills towards the remaining infant. By 18 April both juveniles were observed carrying the infant with no signs of aggression.

Temporarily separating juveniles from the group did not appear to have any detrimental effects on their ability to learn parenting skills. In ideal situations, family groups would be left intact, however in this instance short-term separation from the group did not appear to prevent juveniles from acquiring parenting skills.

## GOOD AND BAD NEWS ON RHINOS



### *An Update from the United Nations Environment Program*

NAIROBI, 12 May 1993 -- On Friday, 14 May, UNEP's (United Nations Environment Program) Special Envoy for rhinoceros conservation, Dr. Esmond Bradley Martin, gave a news conference on the present rhinoceros crisis, and UNEP's efforts to conserve one of the world's most endangered species. The news conference was held at UNEP's headquarters in Gigiri.

Since UNEP started its latest initiative to help save the rhinoceros in September 1992, rhinoceros numbers have increased in Kenya, Namibia, South Africa, peninsular Malaysia and India.

"Not a single rhino has been poached in Kenya since September 1991, and the population of black rhinos has increased in Kenya from around 340 in 1986 to 420 animals today", says Dr. Martin. Recent pressure by UNEP and others on some of the main markets for rhinoceros products, such as Yemen, the United Arab Emirates and China (Taiwan in particular), have resulted in moves to enforce bans on the sale of rhinoceros products in those places. China, with the largest stockpiles of horn in the world -- at least eight and a half tons -- banned the export of all medicines containing rhinoceros horn in late 1992 following a visit to China by UNEP's Special Envoy.

However, continued poaching by poor Zambians has reduced Zimbabwe's black rhinoceros population from around 2,000 in 1989 to under 400 today. Until recently, Zimbabwe was home to the world's largest black rhino population. Desperate poachers are killing rhinoceroses with only stubs of horns. Eleven black and white rhinos which had been dehorned by Zimbabwean authorities to deter poaching have been killed since 1992.

In Nepal, at least 18 rhinoceroses have been illegally killed from the middle of 1992 to early 1993, equal in number to the total poached in the seven-year period ending in 1990. Nepalese poachers are receiving US\$9,000 per kilo for the horn, about 20 times more than what an average Nepalese can earn in a legitimate occupation in one year.

In order to undertake high-level consultations with Governments regarding the present status and trend in rhinoceros conservation and of the present status and trend in importing and/or consuming rhinoceros products, UNEP's Special Envoy will be sent on a five-week mission to southern Africa and eastern Asia. "We want to learn more about how smugglers get their goods to market", says UNEP Executive Director Elizabeth Dowdeswell. "The world community must be made aware that rhinoceroses may disappear altogether, and government officials should take urgent and stringent measures to close down these illegal markets. The threat to the rhinoceros is not only a threat to biological diversity, but also to economies of those countries which rely on wildlife tourism for foreign exchange", said Dowdeswell.

A UNEP-sponsored conference among the Rhinoceros Range States, Consumer States, and Donors on how to finance the conservation of this species was scheduled for 28 June - 1 July in Nairobi.

*>from GreenDisk, April/May 1993, Vol. 1, No. 6*

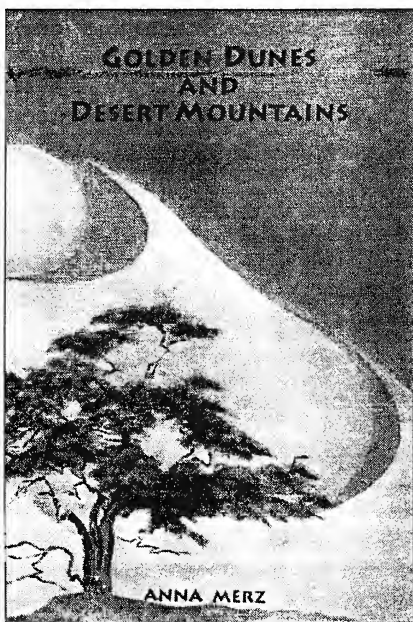


*Announcing—New Book*  
**GOLDEN DUNES  
AND  
DESERT MOUNTAINS**

BY ANNA MERZ  
SKETCHES BY ANNE BENNET

*“Neither (my parents) could comprehend my unlimited passion for animals, my desire to explore on my own, nor why I wanted to go beyond Europe and see strange lands and peoples and animals. Always, I have been a vagabond.”*

So begins Anna Merz's latest book on her travels and adventures in Ceylon, the Sahara, and East Africa. Filled with personal reminiscences, beautiful descriptions, and colorful tales, this work will be enjoyed by arm chair travelers, conservationists, and followers of Anna Merz.



*All proceeds from the book go directly to Ngare Sergoi Rhino Sanctuary for the continued operation and success of the sanctuary.*

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To order your copy (paperback) of the book by  
**Anna Merz - Golden Dunes and Desert Mountains**  
please send \$12.50 plus \$2.50 shipping and handling to:  
**Ngare Sergoi Support Group**  
**P.O. Box 29503, Columbus, OH 43229**

Please send me  book(s) Total Enclosed \$  .

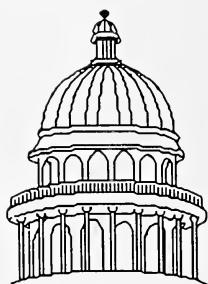
Name

Address

City  State/Province  Zip

# Legislative Outlook

Compiled by  
Phyllis Nilson-Wojcik  
Legislative Advisor



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## North American Free Trade Agreement (NAFTA) and the Environment

Wildlife Conservation - Views of the Sierra Club

NAFTA does not adequately recognize the importance of using trade restrictions to protect wildlife. In fact, its only reference to wildlife conservation is to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), which prohibits the trade of endangered species.

NAFTA's primary flaw in wildlife conservation is that it fails to question whether a product is ethically and legally made. By not doing so, the treaty puts many conservation laws at risk. Examples are the Marine Mammal Protection Act, which prohibits the importation of tuna caught in dolphin-unsafe nets, and the Sea Turtle Act which prohibits commercial fishing techniques that jeopardize threatened and endangered sea turtles.

Under NAFTA, these U.S. laws can be challenged and brought before a NAFTA panel. If inconsistencies are found between NAFTA and the law, Canada and Mexico can impose trade sanctions until the United States makes the law consistent with NAFTA. This means that the fate of laws that have for years protected biodiversity - laws prohibiting importation of wild birds from the tropics to prevent their decimation, and laws prohibiting the sale of elephant ivory to protect endangered species - is uncertain once NAFTA takes effect.

These laws were enacted for a reason - to protect the Earth's wildlife. Yet the U.S. Trade Office has repeatedly failed to address this critical issue.

What can you do:

Write or call your U.S. representative and senators, and the U.S. Trade Representative Mickey Kantor. Urge them not to support a NAFTA that does not protect our global environment.

Representative  
U.S. House of Representatives  
Washington, DC 20515

Senator  
United States Senate  
Washington, DC 20510

Honorable Mickey Kantor  
U.S. Trade Representative  
600 17th Street, NW  
Washington, DC 20506

or call U.S. Trade Office: 202-395-3000

>Sierra Club Newsletter dated 6 July 1993, National Headquarters

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## USDI Announces Options for Wolf Reintroduction in Yellowstone

An experimental population of wolves would be introduced into Yellowstone National Park and central Idaho under the preferred alternative of a draft environmental impact statement released in July by the USDI's Fish and Wildlife Service. The document outlines a wide range of alternatives for wolf reintroduction - from a "no wolf" option, to one calling for management of these areas exclusively for wolves. The preferred alternative suggests that an experimental population be released into Yellowstone National Park and central Idaho if ongoing searches find no naturally occurring wolf packs.

Public comments will be accepted until 15 October, 1993. To review the draft environmental impact statement, submit comments, or receive information about upcoming public hearings, contact: Gray Wolf EIS, P.O. Box 8017, Helena, MT 59601 ( phone 406-449-5202).

>Department of the Interior News Release 1 July 1993



## HAVE FUN BEFORE AND AFTER THE ATLANTA CONFERENCE!

Sign up now: Deadline is August 30.

### PRE-CONFERENCE TRIP: Tennessee Aquarium

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Come spend an afternoon with us before the conference as we drive up to the exciting new Tennessee Aquarium in Chattanooga. We'll have special behind-the-scenes tours and a chance to talk with aquarium staff.

DETAILS: Trip departs Atlanta Sat. Oct. 9 at noon and returns in the evening. The drive to Chattanooga takes about 2 hours each way.

COST: \$25, includes transportation. Box lunch is optional.

TO RESERVE: Send names, addresses, phone number and number of reservations needed to: Charles Horton; AAZK Atlanta Chapter Conference Trips; Zoo Atlanta; 800 Cherokee Avenue; Atlanta, GA 30315. Call (404) 624-5639 for more information.

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### POST CONFERENCE TRIP

Cumberland Island, Okefenokee Swamp, and White Oak Plantation

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Zoo Atlanta's curator of reptiles, Howard Hunt, will lead a weekend tour to three great natural oases in south Georgia/north Florida. First, we'll go to the unspoiled Cumberland Island National Seashore, for a history walk, free time exploring, and a picnic lunch. We'll spend the next day at the incredible Okefenokee Swamp. During our six-hour canoe trip, Howard Hunt will take us into some of the back areas, where we're sure to see some of the alligators he's been studying for many years. On the third day, we'll go to the private White Oak Plantation Breeding Facility, where numerous endangered species are raised. Here we'll have a special inside look at their breeding and holding techniques and facilities.

DETAILS: The trip departs from Atlanta on Friday, Oct. 15, and returns on Monday, Oct. 18 in the evening.

COST: \$325. Includes transportation, hotels, ferry and canoe fees, three lunches and one dinner.

TO RESERVE: Send deposit of \$150 to Charles Horton; AAZK Atlanta Chapter Post Conference Trip; Zoo Atlanta; 800 Cherokee Ave.; Atlanta, GA 30315.

Provide your name, address, phone number and number of reservations needed.

For more information, call (404) 624-5639.



1993 National AAZK Conference

October 10-14

Hosted By: Zoo Atlanta AAZK Chapter  
800 Cherokee Avenue  
Atlanta, GA 30315

Conference Registration Form:  
(Please one per registrant)

Name: \_\_\_\_\_

Street Address: \_\_\_\_\_

City, State/Province: \_\_\_\_\_ Zip \_\_\_\_\_

Zoo Affiliation: \_\_\_\_\_

Name & Title for Badge: \_\_\_\_\_

Primary field of interest: \_\_\_\_\_

|                                   | Yes   | No    |  |
|-----------------------------------|-------|-------|--|
| AAZK member .....                 | _____ | _____ |  |
| Committee Member .....            | _____ | _____ |  |
| Submitting a paper .....          | _____ | _____ |  |
| Vegetarian .....                  | _____ | _____ | Type: _____  |
| Participating in Zoolympics ..... | _____ | _____ |  |
| Bringing an auction item .....    | _____ | _____ |  |
| Interested in a T-shirt .....     | _____ | _____ | Size: <u>  </u> S <u>  </u> M <u>  </u> L <u>  </u> XL |

Please check boxes of fees you will be paying and events you plan to attend:

|                            |  |
|----------------------------|--|
| Full Conference rates      | Daily Conference Rates                     |
| Member \$95 _____          | Monday - \$25 _____ Wednesday - \$25 _____ |
| Member spouse - \$95 _____ | Tuesday - \$30 _____ Thursday - \$25 _____ |
| Non-Member - \$110 _____   | Icebreaker-\$10 _____ Banquet - \$35 _____ |
| Late Fee* - \$10           | Late Fee* - \$3                            |

\*Late Fees charged after 9/1/93 Total Amount Due \_\_\_\_\_

Daily registrants MUST register 48 hours prior to day or event.  
Full Conference rates include all activities, meals and transportation.  
Daily registrants must register for the Icebreaker and Banquet separately.

Conference Trips: Please check the trip you are interested in joining.

- A one day trip to Chattanooga Aquarium on Saturday, October 9.
- A weekend trip to Cumberland Island and White Oak Plantation, Friday through Monday, October 15-18.

PLEASE MAKE PAYMENTS TO: ZOO ATLANTA AAZK CHAPTER

Indicate form of payment:  Check  Visa  Mastercard  Discover  AMEX

Card Number: \_\_\_\_\_ Expiration Date: \_\_\_\_\_

Signature: \_\_\_\_\_



**HOTEL REGISTRATION FORM**

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE/PROVINCE \_\_\_\_\_

ZIP CODE \_\_\_\_\_ PHONE ( ) \_\_\_\_\_

ARRIVAL CODE \_\_\_\_\_ CHECK-OUT \_\_\_\_\_

I WILL BE PAYING BY: \_\_\_\_\_ CHECK \_\_\_\_\_ CREDIT CARD  
(First Night's Deposit or Credit Card Required)

ROOM GUARANTEED BY: \_\_\_\_\_ VISA \_\_\_\_\_ MC \_\_\_\_\_ AMEX \_\_\_\_\_ DISC

CREDIT CARD NUMBER: \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ EXP. DATE: \_\_\_\_\_

NAME AS IT APPEARS ON CARD \_\_\_\_\_

AUTHORIZED SIGNATURE FOR APPROVAL: \_\_\_\_\_

\*\*\* CONFERENCE ROOM RATE (INCLUDING 13% ROOM TAX)\*\*\*  
\$92.66 per night 1 to 2 PEOPLE PER ROOM  
\$103.96 per night 3 to 4 PEOPLE PER ROOM

Rooms for AAZK Conference are being held until September 16, 1993. Any reservations made after that date will be on a space available basis only.

\*\*\* A 72-hour cancellation is required for a deposit refund \*\*\*

CHECK-IN TIME IS: 3:00 p.m. CHECK-OUT TIME IS: 12 NOON

TO MAKE RESERVATIONS BY PHONE, DIAL 1-800-422-7895

Most rooms have two double beds. King-size rooms are available on a request basis only.

Parking at the Sheraton Colony Square Hotel is \$7.50 per day for self park. Valet parking is \$10.00 per day.

Non-smoking rooms available upon request.

Please return this form to:

Sheraton Colony Square Hotel  
188 14th Street, NE  
Reservations Department  
Atlanta, GA 3036174



**CONTINENTAL AIRLINES HAS BEEN DESIGNATED  
THE OFFICIAL AIRLINE FOR THE 1993 NATIONAL AAZK CONFERENCE**

ATLANTA, GEORGIA  
OCTOBER 10-14, 1993

Continental Airlines will offer discounts on the lowest applicable fare at the time of booking. To qualify, reservations must be made through the Continental Airlines convention desk using the easy access number listed below.

After you have reserved your flights, you may purchase your tickets from your local travel agency, any Continental Airlines ticket office or airport ticket counter or Continental Airlines will mail them directly to you.

Regardless of how you choose to pay for your tickets, call the Continental Airlines Convention Desk to reserve your flights.

For discount fares call 1-800-468-7022  
(in Continental U.S. & Canada)

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**20th Annual AAZK Conference -- Zoo Atlanta  
October 10 - 14, 1993**

**FIFTH CALL FOR PAPERS**

Now is the time to claim your spot on the 1992 conference program. Proposed paper, poster and workshop topics will be accepted on all aspects of zookeeping.

- Papers will be limited to 15 minutes followed by five minutes of questions.
- Workshop sessions will be provided for programs, discussions, and debates ranging from 30 minutes to three hours.

Guidelines for preparing manuscripts for the AAZK Conference Proceedings may be found in the May 1993 issue of AKF or you may contact Susan Chan at AAZK Administrative Offices in Topeka.

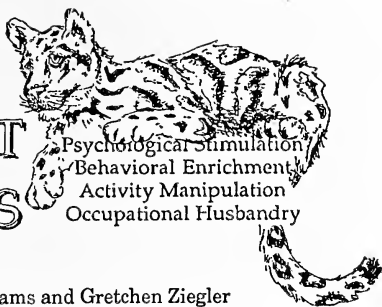
PLEASE SUBMIT A SHORT ABSTRACT FOR ALL PROPOSED PAPER, WORKSHOP, AND POSTER PRESENTATIONS. ABSTRACTS SHOULD INCLUDE THE NAME OF PRESENTER, ZOO AFFILIATION, TITLE OF PAPER, PROPOSED FORMAT (PAPER, WORKSHOP, ETC.) AND EQUIPMENT NEEDED.

- We would like to offer a few panel discussions and breakfast roundtables in order to promote exploration of important issues, challenges and controversies surrounding the future of zookeeping. We welcome any suggestions or requests for specific topics and/or potential panelists. Help ensure that the 1993 conference program serves your needs.

Send abstracts and other program suggestions to:  
Craig Piper or Sue Barnard, Program Committee, 1993 AAZK Conference, Zoo Atlanta,  
800 Cherokee Avenue, SE Atlanta, GA 30315



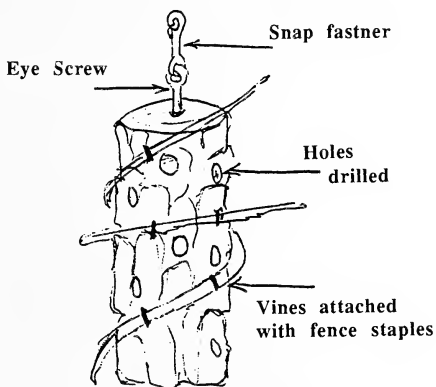
# ENRICHMENT OPTIONS



Psychological Stimulation  
Behavioral Enrichment  
Activity Manipulation  
Occupational Husbandry

by Kayla Grams and Gretchen Ziegler  
Keepers, Topeka Zoo

**TAMARINS** - This feeder is very easy and inexpensive to make and can be used with a variety of food items. We use two variations: a mealworm feeder and a cricket feeder. For the first, holes are drilled into the sides of a branch (the size of branch and size of holes varies) and smaller branches (which are used as perches and handholds) are attached using fence staples. An eye screw and snap fastener are added to the top of the feeder to hang it from the ceiling. Food items are placed inside the holes (chilling mealworms keeps them from escaping too quickly). The same idea is used for the cricket feeder, except a large hole is drilled down the center of the log from the bottom. Smaller holes are drilled in the sides, which open into the central chamber. Crickets are then put inside and a stopper added (newspaper, paper towels, etc). The crickets will slowly make their way out of the feeder.



**Mealworm/Gum Feeder**

We also use Ny-ties to hang bunches of grapes, orange slices, etc. from branches in the exhibit.

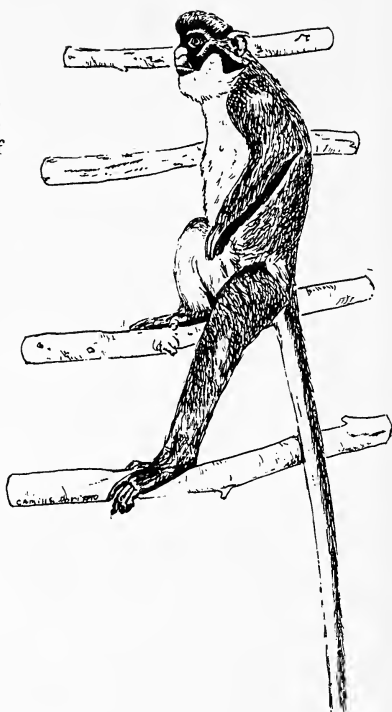
--Kathy Wassel, Scott Race, Cats/Primate Keepers  
Utica Zoo, New York

**KEAS** - The following were developed for a single Kea (*Nestor notabilis*) housed in an exhibit with a solid floor but may be adapted or used for other parrots.

- Hollow log in exhibit can hide piece of fruit or other items for the bird to pull out and move around.
- Slice a hollow log to form "natural" rings which can be placed on perches for the birds to move "round and chew on". Change the positions every once-in-a-while to create a "new" environment. Can also do this with cork bark.
- Pellet feeder - Cut several 3/4 inch - 1 inch holes into 10 inch - 12 inch Boomer Ball™. Bird has to push it around to get food. Can be used with pellets, seeds and chopped fruit. This has been very successful with the Kea. Use a funnel to fill the ball.

-- Teri Maas, Bird Keeper  
Philadelphia Zoo, Philadelphia, PA

**GUENONS** - Lesser spot nosed guenon (*Cercopithecus petaurista fantiensis*) uses three bars on a stairway of multiple branches. New World monkeys make use of this branch or bar positioning.



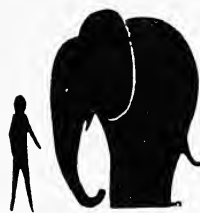
**CAPUCHINS** - A free-spinning feeder log was strung several feet high across the middle of a primate enclosure on a cord which spanned the cage length. Since the log was not directly accessible by perch, various creative attempts were made by several monkeys in order to attain the dates and almonds inserted into the log-holes. These included 1) jumping up from below, 2) starting at one end of the cord and balance-walking toward the log, and 3) standing on the closest perch, turning away from the log and grasping for the cord with the tail-tip in order to draw the log closer. A white faced capuchin (*Cebus capucinus*) loses her balance (see drawing) while trying to "tight rope walk" the cord. All of the approach methods were eventually successful and the log was slowly emptied one "treat" at a time.

-- Camille Dorian  
Monkey Zoo, Orinda, CA



# Elephant Set

(Editor's Note: Beginning with the March issue, this column has contained material on elephant morphology and physiology; nutrition; external diseases including parasites; internal diseases including systemic, gastrointestinal and respiratory; and use of anesthesia. These articles were part of an extensive research manuscript written by Ursula Bechert, DVM of Corvallis, OR.)



## Internal Diseases Part II

By Dr. Ursula Bechert, DVM  
Corvallis, OR

### Central Nervous System Diseases

Clinical signs of heatstroke are dullness, depression, staggering, hyperventilation and sudden collapse (Schmidt, 1986). Therapy must be immediate and aggressive. The animal should be rolled onto its side if in sternal recumbency, given copious repeated cold-water enemas and crushed ice should be applied to the head. Spraying the elephant with cold water helps and massive intravenous doses of prednisolone sodium succinate (1 mg/3kg body weight) or dexamethasone (1 mg/5kg body weight) should be given. Keep the elephant in the shade.

Rabies has occurred in elephants although it is rare. One of the first cases reported was by Beckett in 1932. Signs in an 8-year-old male included paralysis, difficulty in swallowing food or water and involuntary defecation (Gopal and Rao, 1984).

### Respiratory Disorders

Respiratory problems include pharyngitis, tuberculosis, interstitial pulmonary fibrosis, pneumonia, tracheitis, bronchitis, and parasitism (Schmidt, 1986). Respiratory ailments typically have the following signs: hyperemia of trunk mucous membranes, dripping of excessive serous or purulent exudate from the trunk, coughing, dyspnea, tachypnea, fever and anorexia. Treatment usually includes parenteral antibiotics and supportive care.

Pharyngitis is common in Asian work elephants and signs can be mild or severe (Schmidt, 1986). If severe, normal respiration and food ingestion functions can be inhibited.

Elephants are susceptible to both human and bovine tuberculosis (TB) (Schmidt, 1986). Signs include chronic weight loss and trunk discharge. Tests for *Mycobacterium tuberculosis* or *M. bovis* may diagnose the disease but false positive and negative tests occur. Cultures of nasal discharge for acid-fast bacteria may aid in the diagnosis. One Asian elephant had signs of weight loss, poor appetite, polyuria and polydypsia, and was negative on the intradermal skin test for *M. tuberculosis* (Saunders, 1983). Culture, necropsy and histopathologic findings confirmed TB. Findings included enlarged lymph nodes with numerous pale, gray, firm granulomas in the lungs, renal atrophy with mineralization and multinucleated giant cells, hepatic atrophy and granulomas. Isoniazid injections have been reported to be successful in the treatment of tuberculosis (Schmidt, 1986).

Interstitial pulmonary fibrosis was reported in an African elephant in which the only initial sign of a problem was a dog-sitting position before death (Johnson, et al. 1986). The complete blood count and serum biochemistries were normal other than an elevated creatinine kinase level. The initial diagnosis was myelitis or spinal cord trauma. The

## Elephant Set: Internal Diseases, Part II, Continued

definitive diagnosis was made at necropsy. Possible causes of interstitial pulmonary fibrosis include viral pneumonia, exposure to paraquat or 3-methylindole, inhaled inorganic dusts, pyrrolizidine alkaloids of plants and hypersensitivity pneumonitis from birds (serum, excreta or feathers) or thermophilic molds. In the case reported by Johnson, et al. (1986), exposure to birds and moldy hay was deemed the cause.

Nodular herpesvirus infection of the lung has been diagnosed in wild African elephants and is usually of no consequence unless complicated by a secondary infection (Schmidt, 1986t). It affected 80% of the elephants in the wild (Basson, et al. 1971) and the primary lesions included lymphoid nodules in the lungs, cuboidal metaplasia of the alveolar lining cells and the formation of giant and syncytial cells with intranuclear inclusions. A recent study by Metzler, et al. (1990) showed a high prevalence of herpesviruses among captive Asian elephants, however serious illness was rare.

Encephalomyocarditis virus causes acute or peracute death in zoo elephants with postmortem lesions including pulmonary edema and cardiomyopathy (Schmidt, 1986). It is believed to be transmitted from wildlife reservoirs to zoo animals and is zoonotic. The virus has been associated with similar outbreaks in pigs occurring in association with a plague of mice in New South Wales (Seaman, 1987). Hay contaminated by infected mice may transmit the virus to elephants. There is no treatment.

A syndrome in elephants, caused by an unidentified virus, is characterized by excessive serous nasal drainage, serous conjunctivitis, mild anorexia and listlessness (Schmidt, 1986). Usually no treatment is required unless the elephant is debilitated. In that case, antibiotics should be administered since secondary pneumonia is a potential sequela.

*Mycoplasma* bacteria have been reported to cause respiratory infections and arthritis in elephants (Basson, et al. 1971; Schmidt, 1986).

Syngamids or gapeworms in African elephants can interfere with normal respiration if the infestation is severe enough (Schmidt, 1986).

### Liver Diseases

Several trematodes cause problems in elephants (Schmidt, 1986). *Protofasciola robusta* lives in the bile duct or duodenum of the African elephant, causing low-grade chronic injury which may result in stone formation (Schmidt, 1986).

*Fasciola hepatica* and *F. jacksoni* cause liver disease in the Asian elephant, possibly manifest as colic, diarrhea or constipation, depression, icterus, hypoproteinemia, dependent edema, anemia, chronic ill health and death. A fecal sedimentation test is done for diagnosis of fluke infestation (primarily *F. jacksoni*) (Cagle, et al. 1978). Eggs are operculated and measure 60-72 x 108-132  $\mu$ m. There are usually 6-83 per g of feces in infected animals. Trichloromethylbenzol or albendazole have both been used successfully for treatments. Subcutaneous injections of nitroxynil have proven effective but caused local reactions resulting in sloughing of the tissue (Cagle, et al 1978).

Hepatic grammocephalosis affected 100% and dipetalonemiasis affected 50% of 32 free-ranging African elephants sampled by Basson et al. (1971). *Dipetalonema gossi* are round, slender and approximately 15 cm in length. Lesions included focal hepatic necrosis, intrahepatic vasculitis and eosinophilic hepatitis. The bile duct hookworm (*Grammocephalis clathratus*) causes small disseminated hemorrhages, erosions and necrotic foci. Secondary bacterial infections frequently occur, involving the pancreatic duct which fuses with the main bile duct 5-8 cm before entering the duodenum.

Other liver diseases include hydatid cysts, cholelithiasis, cholangitis and hepatitis (Schmidt, 1986). The most common clinical sign is jaundice. Diagnosis is based on serum chemistries and liver function tests. Therapy includes good supportive care and treatment of the primary cause.

## Elephant Set: Internal Diseases, Part II, *Continued*

Next Month: Internal Diseases: Part III - Musculoskeletal Problems, Urogenital and Cardiovascular Diseases.

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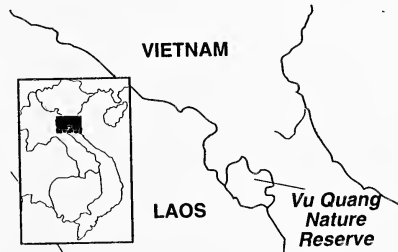


## *Vietnamese 'Mystery' Mammal Gets Name*

The record-breaking new mammal discovered in Vietnam in 1992 has been given an identity: the Vy Quang ox (*Pseudoryx nghetinhensis*). The ox is so unlike any known creature that it has had a new genus, *Pseudoryx*, created for it, within the family Bovidae, which includes cattle, goats, antelopes and goat-antelopes. This is the first time in 50 years that a new genus of large mammals has been discovered.

Dr. John MacKinnon, who was the leader of the Vietnam Ministry of Forestry/World Wildlife Fund team that discovered the ox, noted that the find "must give hope to those still searching for new creatures in a world we thought we knew so well."

Publication of the new species name and description in *Nature* (vol. 363, pp443-5) ends a year of mystery and detective work to decide where the new mammal fits into the animal kingdom. After the initial findings of three sets of horns in the Vu Quang nature reserve of Ha tinh province, four further surveys by Vietnamese foresters revealed another 20 specimens of the mystery animal, including three complete skins, though a sighting of a live ox has so far eluded scientists.



The new ox weighs about 100kg and stands 80-90cm at the shoulder. Its short tail, small feet and larger facial glands set it apart from wild cattle, as does its fine hair, lack of mane or dorsal ridge and lack of horn-spiralling from goats or goat-antelopes. Superficial similarity to the Arabian oryx (the best known member of the antelope subfamily, now found only in Oman), which shares the straight sharp horns and black and white patterned

## Vietnamese 'Mystery' Mammal Gets Name. *Continued*

head, led to the choice of genus name, but the relationship is not close. DNA analysis just completed in Denmark and the U.S. shows the new mammal is instead most closely related to the oxen (subfamily Bovine).

The latest findings suggest a few hundred individuals survive in an area of at least 4,000 km<sup>2</sup> in Ha tinh and neighboring Nghe an provinces (previously the single province of Nghe tinh, hence the scientific name), in pristine evergreen montain forests in northern Vietnam along the border with Laos. Dr. MacKinnon and his colleagues plan more surveys to explore these poorly known forests that somehow survived 30 years of Vietnam War completely unscathed. Conservationists must hurry, he warns, to protect the region from a wave of interested collectors.

Already the Vietnamese Government has tripled the size of Vu Quang nature reserve and now plans to establish another two reserves in the area. The Dutch Government is finalizing plans for an aid package to assist.

*>from BBC Wildlife, Vol. 11, No. 7, July 1993*



## Chapter News

The Association is pleased to welcome two new Chapters. We wish them every success with their Chapters and their Chapter projects. The newly chartered Chapters are:

Central Illinois Chapter - is made up of members from the Henson Robinson Zoo. Their address is 1100 East Lake Drive., Springfield, IL 62707. Chapter officers are:

President.....Susan Lynch  
Vice Pres.....Shelly Moser  
Secretary.....Monica Thornton  
Treasurer.....Sue Nelle  
Chapter Liaison.....Jim Funsch  
Officer-at-large.....Joe Cadigan

Fort Worth Zoo AAZK Chapter - is made up of members from the Fort Worth Zoo. Their address is c/o Fort Worth Zoo, 1989 Colonial Parkway, Ft. Worth, TX 76110. Chapter officers are:

President.....Roseann Giambro  
Vice Pres.....Hope Bellino  
Secretary.....James Whisenant  
Treasurer.....Rogann Wood  
Chapter Liaison.....Mike Fouraker

### Pikes Peak Region AAZK Chapter

Greetings from Colorado! The first year for the Pikes Peak Region AAZK Chapter at the Cheyenne Mountain Zoo has been a very busy and very successful one. In April, Andy Lodge graciously agreed to speak at the Cheyenne Mountain Zoo. Our AAZK Chapter sponsored the presentation.

Our main fundraiser this year was a silent auction held in our new Primate World. Local businesses as well as many individuals were very generous with donations. Attendance was good for a first annual event. Everyone was in a spending mood and our Chapter made over \$1600.00. There was a half-time show featuring the Plains Indian Dancers. So far we have purchased acreage of endangered rainforest, made a donation to the Ngare Sergoi Rhino Sanctuary (since we were regretfully unable to participate in the "Bowling for Rhinosis" fundraiser), and have made exhibit improvements (i.e. plants, rocks and paint) in the Bird House and Aquatics Building.

Other projects we have been involved with are establishing an enrichment fund through recycling, a Conservation Day Bake Sale, monthly Brown Bag Lunch keeper talks, and an AAZK-sponsored appreciation BBQ party for CMZ



## Chapter News, Continued

employees. We have begun organization on the CMZ slide library and have purchased a book for the Zoo Library on Naked Mole Rats since they have recently joined our collection.

Our officers are:

President.....Kris Hassler  
Vice Pres.....Jerri Curran  
Secretary.....Karen Wilkinson  
Treasurer.....Andrea Bernee  
Chapter Liaison.....Tracey Anderson

Being a fairly new Chapter, we are pleased with the success we have had this year. We have high hopes and even higher goals for the year to come including conference support and more in house improvements as well as continued efforts for world-wide conservation projects.

--Tracey Anderson, Chapter Liaison

### Columbus AAZK Chapter

In January, Nora Batterton of the Horticulture Dept. showed us that predator/prey are not just found in the Herbivore/Carnivore Building. In February, Charlene Jendry shared her adventures on her 10-week keeper project working at the Karisoke Research Center in Rwanda.

In April, Bill Caccolfi of New World Expeditions spoke to us on the upcoming white water rafting trips on the New River in West Virginia. In May Director Emeritis Jack Hanna spoke on his trip to the Kingdom of Nepal.

--Dianna Frisch, Pres.

### Philadelphia Zoo Chapter

Our Chapter is very excited to report that we hosted the most successful "Bowling Rhinos" to date with over \$13,000 being raised. This year's event drew over 80 bowlers. One AAZK member who deserves special merit is Richard Buthe, who raised \$5,000 in donations on his own. Thanks Richard for giving us all incentive to try harder next year!

Within the zoo itself, we are in the process

of initiating a wild bird survey of birds seen inside the Gardens. Eventually we hope this data will lead to a guide for visitors.

The Chapter also donated \$100.00 for a sign language course co-sponsored by the zoo that allows keepers and other interested staff to develop their signing abilities. In the fall, the zoo hosts a deaf awareness day and keepers get a chance to put their knowledge to the test by giving talks throughout the zoo.

Locally we are fortunate enough to have the executive director of the Wild Resource Conservation Fund come to the zoo and speak about their otter relocation program. This fund is supported through a check-off on our state tax form. The program hopes to re-establish otter populations in north and southeastern Pennsylvania, relocating animals from as far away as New York state. Our Chapter hopes to fundraise for this important project.

--Sandra Robbins, Chapter Liaison

### Where To Purchase Chapter Products

**AAZK Magnetic Keeper Safety Signs** - these signs measure 6" x 8" and are imprinted with "Animal in Area" and "Keeper in Area" for placement as warranted on metal doors/surfaces. Flint Hills AAZK Chapter, Sunset Zoo, 11th & Poyntz, Manhattan, KS 66502. \$10.85 each plus \$1.00 P&H.

**AAZK Logo T-Shirts** - (\$8.50) available in tan, blue and brown in S,M,L,XL., **Sweatshirts** (\$18.00) available in grey or maroon with black logo in sizes M,L,XL. Both are 50/50 poly/cotton; and **Colder Holders** (\$3.50) - Little Rock Chapter AAZK, Little Rock Zoo, #1 Jonesboro Dr., Little Rock, AR 72205.

**AAZK Logo Mesh Shopping Bags** - Philadelphia AAZK Chapter, Philadelphia Zoo, 34th St. & Girard Ave., Philadelphia, PA 19104. These 16" x 19" white nylon mesh bags have the AAZK logo printed on the navy canvas top. They are reuseable, strong and have a squared bottom for easier filling. Each bag is \$5.00 which includes postage.

*Continued on page 293*

# Connections

By  
*Robert Berghaier, Senior Keeper  
Philadelphia Zoo, Philadelphia, PA*

In the spring of 1991 the Philadelphia Museum of Art held an exhibition on the paintings of Henry Ossawa Tanner. Mr. Tanner was an Afro-American artist who was born in Philadelphia in 1859. Tanner's artistic career spanned the decades of the 1880's until his death in France in 1937. Tanner has frequently been recognized purely as a painter of religious themes (Tanner Exhibition Catalogue, Philadelphia Museum of Art 1991). However, the sample of his works included in this exhibition showed that his paintings covered a far greater range of subjects. Several of his pictures had animals, particularly lions, as major components.

The subject of two of Tanner's first paintings involve a male lion named Pompeii. Pompeii was acquired by the Philadelphia Zoo for its opening in 1874 and he lived there another ten years after his arrival. In 1880 Tanner produced a painting called "Pomp At The Zoo". It shows a crowd of zoo visitors, circa 1880, watching intently as a zoo keeper raises a slab of meat hanging off an iron spear towards the outstretched paw of a hungry "Pompeii". To the best of my knowledge this painting is the first depiction of an American zookeeper in any type of popular medium. In 1886 Pompeii was the subject of another Tanner work, "Lion Licking Its Paw (After Dinner)". This work shows Pompeii cleaning up after a bloody meal with the remains of his feast in the foreground. Pompeii in this painting is removed from his captive condition by a background of jungle-like vegetation.

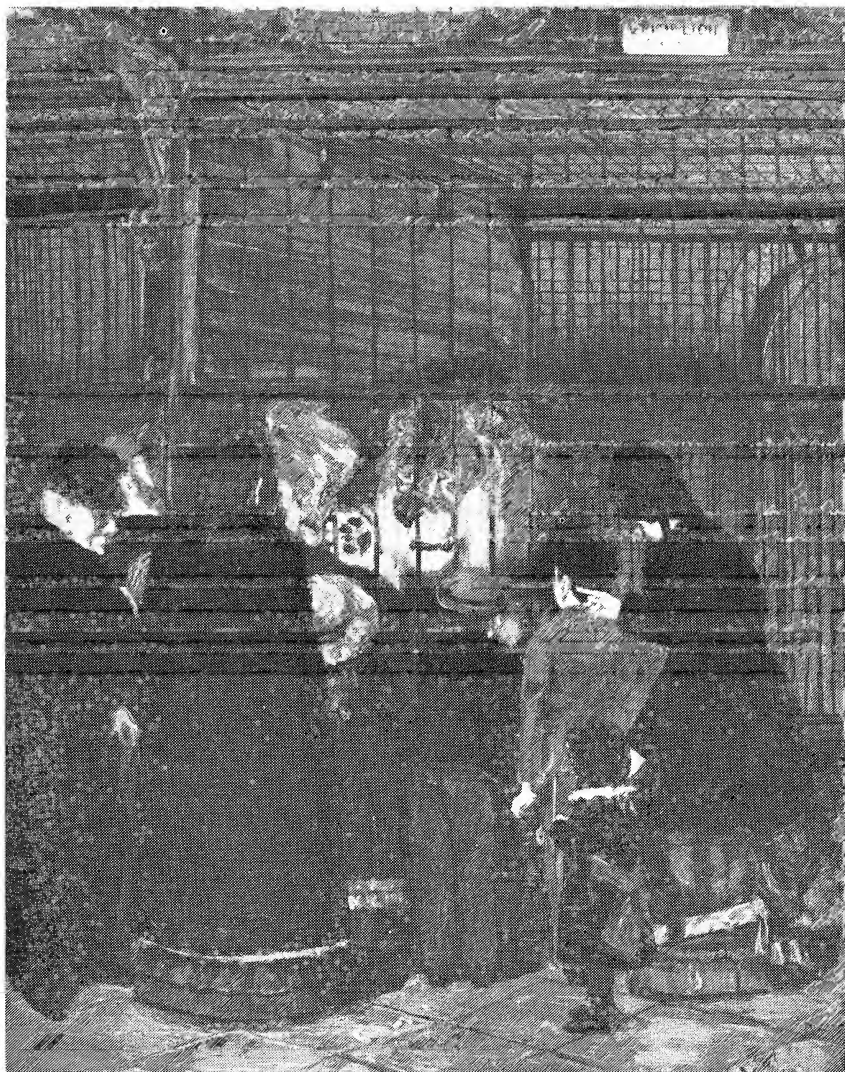
Lions were a recurring theme in Tanner's art. After Tanner left Philadelphia he continued to study lions in the Jardin des Plantes in Paris. He created other works that use lions as a principal subject. These include two different versions of "Daniel In The Lion's Den" (1895) and (1917), and "Lions In The Desert" (1897). The first two paintings depict the well-known Old Testament story. The second work is a most interesting study of lions. It depicts two males and one female lion moving through an arid Palestinian landscape. All three cats have the lean, rangy look of lions found in desert areas, unlike the plump lions found in zoos or the African savanna. The curator of the Tanner Exhibition noted that on his description of this painting, Tanner would not have seen lions in that part of the world since they disappeared during the days of the Roman Empire. Lions actually lasted a bit longer than that era. Guggisberg, in "Wild Cats Of The World", thinks that they disappeared in Palestine at the time of the Crusades.

Even though Tanner traveled to Palestine and Morocco he never had the opportunity to see lions in the wild. Lions were found in the Atlas Mountains of Morocco up until World War I, but they already were rare at the time of Tanner's visit to the area in 1912. I would like to think that Mr. Tanner would have wanted to have seen lions in the wild.

When I saw this exhibition last year, I was drawn to Tanner's early paintings of Pompeii the lion. Henry Ossawa Tanner saw his first lion at an early age at the Philadelphia Zoo. His use of the great cat in his paintings, dating from his teens and throughout his career, shows the interest and fascination that they held for him.

Lions have always held a similar fascination for me. My first memories of animals date from visits to the Philadelphia Zoo with my parents at the age of three. The size and obvious power of the zoo's lions impressed me deeply as a child. I wanted to watch them for hours; unfortunately, my parents wanted to see the rest of the animals at the zoo. Those early memories created an interest first in lions, then the great cats, and finally the rest of the natural world. It was an interest that has led to my present career.

My first job at the Philadelphia Zoo was as a relief keeper in the Lion House. I realized that I had discovered a connection between myself, lions at the Philadelphia Zoo and a long dead and little known Black American painter. Unlike Mr. Tanner, I eventually got to see wild lions, the first in Lake Manyara, Tanzania in 1979. Henry, they were wonderful, you would have loved it.



**Henry Ossawa Tanner's painting "Pomp At The Zoo" may well be the first depiction of an American zookeeper to appear in any type of popular medium. The zookeeper, at left in side profile wearing cap, is holding up a slab of meat on a spear for Pompeii. (Photo of original oil painting by Graydon Wood [1989] from Philadelphia Museum of Art, Philadelphia, PA)**

# Viewpoint

*The Viewpoint Column is made available for the discussion of opinions pertinent to all aspects of zoos and zookeeping. Publication of reader's opinions does not imply endorsement on the part of AKF or AAZK, nor do opinions expressed herein necessarily reflect those of AKF or AAZK. The AAZK Board of Directors and the AKF editorial staff reserve the right to determine the appropriateness of articles submitted for this column.*

## **Death Does Not Take A Holiday**

By

*Richard J. Elia, Animal Keeper  
Lincoln Park Zoo, Chicago, IL*

Coming from the Greek "eu" (easy) and "thanatos" (death) is the word euthanasia. The second meaning is the deliberate putting to death of an organism in pain or with an incurable disease/condition. This has become a highly controversial and emotionally-charged topic. In the United States and other countries, talk of assisting and aiding the dying process has sparked considerable debate. The debate not only involves the termination of the life of a human being, but also the termination of animal life. The termination of animal life evokes in many people the same emotions and physical stress associated with euthanizing a human being.

Lincoln Park Zoo occasionally uses euthanasia to end the life of some animals entrusted to its care. Each case is unique. Each decision on whether or not to end an animal's life is made after careful consideration of what course of action would be in the best interest of the animal.

Dr. Lester Fisher, DVM, retired director of Lincoln Park Zoo, explains that at the zoo an animal's life not only depends on the department curator but also on the care and attention given by all of the zoo staff. The care of each animal is discussed in animal management meetings. A decision on whether an animal lives or dies is not a single person's responsibility but a collective decision made by everyone responsible for the animal's care. No individual has complete control over an animal's life. This animal management meeting might be compared to the ethical medical committee who are designated, along with families, to make decisions regarding eliminating extraordinary means to preserve a human life. The animal management committee takes into consideration an animal's public life, condition, general health, and welfare. Public perception of an animal's condition, housing, animal health, and the explanation of the course of action taken in the animal's behalf is also addressed.

There are several reasons an animal may be euthanized. These include: incurable disease, inability to treat, costly treatment of a disease, a slow painful or lingering death, and presence of a harmful pathogen (disease) to which it is immune.

An incurable disease is usually identified by the veterinary staff and a decision is made, according to Dr. James Letcher, DVM, Assistant Veterinarian at Lincoln Park, as to the extent that the animal is suffering and when to terminate its life.

It is common for animals to be aggressive with one another. Therefore, in some cases, when the animal is severely injured it may be in the best interests of the animal to consider euthanasia. For example, a hoofed animal that sustains a broken leg in a fight with another animal may be a candidate for euthanasia.

The costly treatment of diseases plays a role in the everyday management of the Lincoln Park Zoo. The ever-tough decision of whether to spend \$500 for medicine to treat a guinea pig, white mouse, or pigeon, must be balanced against whether or not the same and limited money could be spent for a great cat or gorilla. It is not an easy decision, but it is no one

## Viewpoint - Death Does Not Take A Holiday, *Continued*

single person's decision. Not treating an animal may be tantamount to killing it.

In contrast to the above dilemmas of "to euthanize or not" is the story of Lenore. Lenore, a female gorilla, who was caught in the wild, had developed osteomyelitis (bone infection) in her finger. The first medical decision made for Lenore was to remove her infected bone and insert a metal bar where the bone was removed. After that was done, she was given a medical check-up. One month later the disease had extended beyond the metal bar and infected her wrist. After many meetings and much discussion, it was decided that the gorilla was a healthy, viable animal and all efforts should be made to continue her life. It was believed that by amputating her arm just below the elbow the infection could be stopped. As to the possibility of public displeasure at seeing a handicapped animal on exhibit, it was decided to install a sign in the building display explaining the event. Lenore now lives among the other gorillas without undue stress. Not all stories have such a happy ending.

With a slow, painful or lingering death decision, facial expressions, body position, and the animal's activity play an important part in determining the "quality of life" the animal is living. Dr. Dennis Meritt, PhD, Assistant Director at Lincoln Park Zoo, describes the example of a hedgehog at Lincoln Park Zoo living three times its natural lifespan: "It became totally blind because of cataracts of both eyes. The hedgehog was under stress and in discomfort; the degree of this stress and discomfort was determined by observation. The animal's 'quality of life' was rapidly deteriorating." The committee decided to euthanize the animal.

In some animals a pathogen (disease) can infect the host animal with no ill effects. The host animal may have a natural immunity to this pathogen, but when the animal is housed with another species, the pathogen can be transmitted via the feces or other body fluids into another animal that does not have a natural defense to it and can die of that pathogen. According to Ms. Anita Cramm, Assistant Curator of Birds at Lincoln Park Zoo, "If a host animal is infected with a pathogen that we can treat, we will. If the disease is not harming the host animal but can be transmitted to other animals in the collection, we will look at the possibility of giving the animal a separate or new home if we or another zoo has the space for it." The animal may then be placed with other animals not affected by the pathogen in isolation. However, if the disease is dangerous to the collection and no reputable zoo will take the animal, it may be euthanized.

Euthanasia is not to be done around other animals, whenever possible, and not around the same species. When an animal to be euthanized is around other animals it may cause fear, stress, and apprehension in the others. It is important to minimize any possible fear and/or apprehension of an animal. The procedure for euthanasia is simple and quick. Beginning with isolation and gentle restraint of an animal in familiar surroundings. Then an animal is injected with tranquilizing or immobility drugs. Next an animal is sedated to cause loss of consciousness (to bring the animal as close to deep natural sleep as possible); finally an euthanizing agent is administered to cause death, thus creating as little pain or discomfort as possible.

I wish to add that even if an animal dies, it has a social use, according to Mr. Kevin Bell, Assistant Director at Lincoln Park Zoo. Standing requests are made from local museums for the skin, body, and skeleton of many of the animals at the zoo. These parts are then properly preserved and used for study, public display, educational material, and as anatomical specimens, usually at the Field Museum.

Lincoln Park Zoo does not euthanize an animal for convenience. In the past, male hoofed animals were routinely euthanized at some zoos because of the difficulty of their management. Lincoln Park Zoo does not believe in killing animals for this reason, instead they will do what is necessary to continue that animal's existence. One zoo solution is to find a home among the approved member institutions of the American Association of Zoological Parks and Aquariums (AAZPA) organization. The basic requirement is that the animal will be well cared for the rest of its life. The animal may even go to a private individual and the reasons for such a procedure are discussed with the Director of Lincoln Park Zoo. One example is an aged animal becoming geriatric. According to Mr. John Gramieri, Curator of Reptiles at Lincoln Park Zoo, only when a good home is found is a

## **Viewpoint - Death Does Not Take A Holiday** *Continued*

waiver issued. If no place can be found, the zoo will do all that is necessary to maintain the animal in its inventory.

Discussed here are different reasons for euthanizing an animal. At Lincoln Park Zoo the animals will be cared for and raised to continue their existence into the future century for people to enjoy. They are a heritage to continue not only for ourselves but for our children and neighbors.

It is to be stressed that euthanasia is used only as a very last choice and, most importantly, that is not one person's decision. Zoological collections at Lincoln Park Zoo are maintained for humans to increase their understanding of the world around them and the animals that populate that world.

"The wildlife of today is not ours to dispose of as we please. We have it in trust and must account for it to those who come after." (King George VI).

### **References**

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### **Acknowledgments**

I would like to thank the staff and employees of Lincoln Park Zoo for allowing me to interview them.



## **AAZK Announces New Professional/Contributing Members**

|  |   |
|--|---|
| Darryl Dixon, Watertown Zoo (NY)             | Hendrik Smock, Reston Animal Park (VA)    |
| Carlton Hamlett, Kings's Dominion (VA)       | Janet N. Sherd, King's Dominion (VA)      |
| Stephanie Forbes, Zoo Atlanta (GA)           | Keith Wyrick, Lion Country Safari (FL)    |
| Terri Rice, Knoxville Zoo (TN)               | Terry Cannon, Knoxville Zoo (TN)          |
| Lisa Drummer, Knoxville Zoo (TN)             | Kim Widner, Knoxville Zoo (TN)            |
| Lisa Juengling, Cincinnati Zoo (OH)          | Harold DeKarske, Menominee Prk Zoo (WI)   |
| John Donahue, Lake Superior Zool. Gdns. (MN) | Michael Vinas, Brookfield Zoo (IL)        |
| Richard Elia, Lincoln Park Zoo (IL)          | Craig Scultz, Grindstone Valley Zoo (IL)  |
| Terry Dvorak, Heritage Zoo (NE)              | Richard D. Toth, Jr. Texas State Aquarium |
| Carin Peterson, Good Day Ranch (TX)          | Michelle Reddy, San Diego Zoo (CA)        |

### **Renewing Contributing Members**

John Seyjagat, Director, The Lube Foundation, Inc., Gainesville, FL  
Charles H. Hoessle, Zoo Director, St. Louis Zoological Park, St. Louis, MO  
Cate Werner, Denver, Colorado  
Kathy DeFalco, San Diego Zoo, San Diego, CA  
John Bretton, San Diego Zoo, San Diego, CA

# Scientific Research to be Reorganized Under National Biological Survey at USDI

WASHINGTON, April 26 -- Interior Secretary Bruce Babbitt today outlined a reorganization of biological science conducted by the Department of the Interior that consolidates its biological research and inventory activities under a National Biological Survey. Babbitt provided details of the proposal in an appearance today before the House Appropriations Subcommittee on Interior and Related Agencies.

"The National Biological Survey will provide a map to help us avoid environmental and economic conflicts," Babbitt said. "The Survey will fill a tremendous vacuum by providing a coordinated biological science capability that will serve all the bureaus within the department. Both economically and environmentally, the NBS will be a useful tool for sound resource management decisions."

The National Biological Survey will be created Oct. 1, 1993, by assembling substantial portions of the biological research and survey elements of three departmental bureaus -- the U.S. Fish and Wildlife Service, the National Park Service, and the Bureau of Land Management -- and smaller contributions of activities from five other bureaus. Through this reorganization, the National Biological Survey will serve as an independent, free-standing biological science bureau that will build upon existing biological research conducted inside and outside government.

"What we're doing is strengthening the credibility of science," said Babbitt. "The survey will not incorporate regulatory or resource management responsibilities. Its function will be to provide information for resource managers. The resource managers will retain responsibility for management decisions, and the decisions confronting them will largely shape the agenda of NBS."

The reorganization plan will be implemented within the department's 1994 budget by moving approximately \$180 million in inventory, research and support capabilities into the newly created National Biological Survey. The NBS will be comprised of approximately 1,600 scientists and support personnel. Specific projects will be undertaken by a network of field scientists, and all biological data integrated by NBS will be made available for transfer to resource managers and scientists outside the survey.

The NBS will replicate a partnership among the department, the National Academy of Sciences, and the Smithsonian which led to the creation of the U.S. Geological Survey. The National Academy of Sciences is conducting a review of the proposal to help define its long-term mission and relationships to other federal and state research activities. Dr. Thomas E. Lovejoy, assistant secretary of external affairs for the Smithsonian Institution, is serving as science advisor to Babbitt to coordinate the program with other science activities.

The National Biological Survey will use and establish scientific protocols in cooperation with other agencies to enhance comparability of research and long-term trend analyses. Research and biological inventory methods will include the National Wetlands Inventory, the Gap Analysis Project, and other new components. Additionally, the inventory program will be conducted in concert with other federal and state agencies, the State Heritage Program directed by The Nature Conservancy, and other non-governmental organizations and academia.

Some examples of projects to be included under NBS include:

- \* Expanding research on Everglades National Park to provide an ecosystem perspective on the forces causing severe ecological problems facing the Everglades.

- \* Boosting a collaborative effort to restore and preserve sensitive habitat areas within southern forested wetlands.

## National Biological Survey, *Continued*

\* Examining the causes and developing recommendations to reverse the decline of salmon stocks in the Pacific Northwest.

The National Biological Survey will produce a biennial report on the status and trends of the nation's biological resources.

The National Biological Survey (NBS) will focus on national, regional and local ecological science needs. It will help resource managers acquire and apply the scientific tools necessary for sound management decisions. The NBS will provide scientific research and biological data to other federal agencies, state and local governments and other entities.

The National Biological Survey will:

\* Provide a national focus for inventorying and monitoring of biological resources, and integrate Interior's biological research activities.

\* Ensure that resource managers receive high quality, independent scientific advice.

\* Consolidate many related functions into one organization, enhancing productivity and efficiency.

\* Provide proactive, anticipatory research that will help avoid environmental and economic conflicts.

Effective Oct. 1, 1993, the National Biological Survey will consolidate approximately 1,600 scientists and support personnel within the department; however, most scientists involved in applying the results of biological science will remain with their bureaus. For example, there are about 4,500 Fish and Wildlife Service employees classified as biologists; and of that total, about 950 will be transferred to NBS. Researchers moving to NBS are involved in formation and testing of hypotheses, the study of population dynamics, physiology, behavior, ecology, habitats, biodiversity, and ecosystem processes and functions; and national inventories or those of national significance.

The NBS will begin a collaborative process for biological monitoring and ecosystem mapping.

\* A national status and trends program will work with federal agencies, states and nongovernmental programs, including The Nature Conservancy, to provide a report by September 1994, offering a picture of the nation's biological resources and outlining the structure of a long-term monitoring effort.

\* Standardized scientific protocols will be established in cooperation with other agencies to enhance comparability of methods and long-term trend analysis. Biological inventory methods will include the National Wetlands Inventory, the Gap Analysis Program, and several new components.

Research activities within NBS will be undertaken by four regional centers, 12 research laboratories, 40 field stations, over 70 cooperative research units. Cooperative research units are collaborative ventures involving a federal agency (FWS, NPS, or BLM), a state university, and in some cases, a state fish and game agency. Additional funding will be provided for the program (\$6.6 million). The NBS science agenda will place a great deal of emphasis on field-driven research priorities. Over two-thirds of the National Biological Survey budget will be dedicated to research on species biology, population dynamics, ecosystems, and inventorying and monitoring functions.



## National Biological Survey, *Continued*

The National Biological Survey is consistent with other scientific investments in the department's 1994 budget. Those initiatives include:

- \* \$24 million for Bureau of Land Management's renewable resources management, including a 58 percent increase in the bureau's riparian habitat restoration efforts.
- \* \$34 million of the Bureau of Reclamation's Central Valley Project (California) restoration of wildlife and fishery habitat.
- \* \$6 million increase for National Wildlife Refuges & Hatcheries.
- \* \$31 million increase (65 percent) for the U.S. Fish and Wildlife Service to launch habitat protection efforts before species are listed as endangered, and draft recovery plans for a back-logged list of endangered species.

By consolidating existing fragments of biological research within the department into an independent, non-advocate science bureau, the National Biological Survey will improve research quality and productivity at a lesser cost.

*>from Green Disk, April/May 1993, Vol. 1, No. 6*

*Continued from Page 285*



**AAZK Logo Keychain** - Dallas Zoo AAZK Chapter, 621 E. Clarendon, Dallas, TX 75203 attn: Sara Weller. This keychain has a thermometer and the AAZK logo on the front and a wind chill chart on the back. Thermometer is encased in durable acrylic and is approximately 1" x 2" in size. Price each is \$4.00 which includes postage.

Thomas, c/o Beardsley Zoo, 1875 Noble Ave., Bridgeport, CT 06610.

**AAZK "Keepers Care" Buttons** - are once again available from the Lincoln Park Zoo AAZK Chapter, 2200 N. Cannon Dr., Chicago, IL 60614. Attn: Susan Moy. Cost is \$5.00 for 5 buttons (minimum order of five please).

**AAZK Logo Bumper Sticker** - The Jacksonville, FL Chapter offers this silk-screened 3" x 9" bumper sticker with kelly green lettering, black border/center line and the nationally recognized AAZK logo on a white background. The imprinted message reads "Zoo Parks - Modern Arks". These bumper stickers are \$2.00 each for 1-49 and \$1.55 each for 50 or more. The postage is an additional \$.30 per each 5 bumper stickers ordered. If you would be interested in purchasing these for your fundraisers or to be used as a sales item in your gift shop - an item that promotes both Zoos and AAZK, please contact either Micki Corcoran or Ann Hinton at this address: Jacksonville AAZK Chapter, 8605 Zoo Road, Jacksonville, FL 32218.

**AAZK 25th Anniversary Pocket Knife** - knife has five functions (2 blades, scissors, toothpick and tweezers). Price is \$5.75 which includes postage. Please make checks payable to the Memphis AAZK Chapter and mail to Dena Mandino, Memphis AAZK Chapter, 2000 Galloway, Memphis, TN 38112.

**AAZK License Plate Frame** - this white licence plate frame features the rhino logo with the words American Association of Zoo Keepers, Inc. across it in green. The price is \$5.00 which includes postage. Orders from Canada please send an additional \$1.00 to cover postage. Please make checks payable to: Detroit AAZK Chapter and mail to Michelle Seldon, Detroit AAZK Chapter, P.O. Box 39, Royal Oak, MI 48068.

**AAZK Logo Flying Saucers (Frisbees)** - made from recycled plastic, these flying saucers are emblazoned with the AAZK logo in black on bright green. Available from the Beardsley Zoo AAZK Chapter for \$5.00 by contacting Chapter Vice President Rob





# Book Review

## Birds of South America, Vol. 1, The Oscine Passerines

By Robert S. Ridgely and Guy Tudor  
University of Texas Press 1989  
Box 7819, Austin, TX 78713  
562 pgs. Hardback \$65.00

*Review by Tom Aversa  
Senior Zoo Keeper  
Franklin Park Zoo  
Boston, MA 02121*

Birds of South America is a projected ten-year undertaking, authored by Bob Ridgely and illustrated by Guy Tudor. Ridgely, who hails from Philadelphia's Academy of Science, has already authored the Birds of Panama. Guy Tudor is one of today's most respected bird illustrators. His past accomplishments include the Birds of Venezuela and the Birds of Columbia. The project which is backed by World Wildlife Fund amongst others, will cover 3100 South American birds when the fourth volume is completed. Tudor and Ridgely chose to begin with the songbirds because they felt that this group most needs an updated comprehensive field guide. Over 750 species of Passerines are covered in this book, with over two-thirds fully illustrated. Four volumes will ultimately be required because no superficial field guide would be adequate for the vast numbers of neotropical birds.

The introductory chapters give perspective to earlier works, most notably Meyer de Schauensee's Birds of South America, which was published in 1970. Sections on habitat, bibliography, migration, and conservation prepare the reader for the species accounts. These accounts, which make up the bulk of the text, are extremely well-organized and edited. Identification, similar species, habitat, behavior, and range are thoroughly covered. Some 723 range maps are included. Natural history information, which is indispensable to field biologists as well as bird keepers, is provided in a clear and concise manner. A fine bibliography and index of common and scientific names is included at the end of the book.

Tudor's plates are works of art. Across from each, the basic characteristics are listed. Additional species not illustrated are included under each bird that is. Detailed information for all species is provided in the text which is referenced by page number on each faceplate. Females are well-illustrated, and some subspecies are shown. Although every species could not be illustrated due to the prohibitive cost, a member of every genus and at least one member of every visually distinct species is pictured. Species not shown are well-described and compared to the similar species on the plate.

Ridgely and Tudor have produced an outstanding work which adequately combines their field observations with analysis and review of past sources of published information. Due to their steadfast efforts, as well as the conservation organizations that financially backed the project, we will soon have the first comprehensive definitive guide to all South American birds. University of Texas Press, which is firmly committed, should also be commended, as the first volume is handsomely bound and well worth the price. It would be a fine addition to any bird keeper's book collection, although anyone traveling in South America would find it indispensable for identifying the birds encountered.



**L.I.N.K.**  
**(Liaison and Information Network for Keepers)**

Coordinator for the LINK System: Mark de Denus, Assiniboine Park Zoo, 2355 Corydon Ave., Winnipeg, Manitoba, Canada R3P 0R5. (204) 837-2916 (h).

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**Provinces of Alberta & British Columbia** - Grant Tkachuk, 10139 157th St., #206, Edmonton, Alberta T5P 2T9

*Institutions wishing to advertise employment opportunities are asked to send pertinent data by the 15th of each month to: Opportunity Knocks/AKE, 635 Gage Blvd., Topeka, KS 66606. Please include closing dates for positions available. There is no charge for this service and phone-in listings of positions which become available close to deadline are accepted. Our phone is 1-800-242-4519 (U.S.); 1-800-468-1966 (Canada). Our FAX is 913-273-1980.*

**ZOOKEEPER**...accepting resumes for full-time Keeper positions, BIRD (psittacines, cranes, waterfowl) and MAMMAL (ungulates, primates, cougars, cheetahs). Degree or equivalent zoo related experience. Daily duties include care, feeding, habitat upkeep, breeding programs, record keeping, medical coordination, training, acquisitions, etc. Must be willing to work weekends/holidays. Starting salary \$15,000-\$20,000 with year-end bonus and benefits. Excellent growth potential. Salary commensurate with experience. Send resume/references to: Washington Zoological Park, 19525 SE 54th, Issaquah, WA 98027. **Positions open until filled.**

**ZOOKEEPER** ...the North Carolina Zoological Park is now accepting resumes for approximately 30 positions (Keeper I and Keeper II) as part of a \$32 million North American Continent expansion project. Positions will be filled in an on-going basis from July '93 - January '94 for openings in Rocky Coast, Cypress Swamp, Sonora Desert, Carolina Streamside and North American Plains Habitats, as well as a contact area. A 4-year degree in zoology or a related field is preferred for both Keeper I and II positions. Two years of zoo experience or an equivalent combination of education and experience is required for Keeper II positions. At least one year experience in one or more of the following specialty fields is desired: North American ungulates, carnivores, small mammals, pinnipeds, puffins, reptiles, amphibians and fish. Starting salary \$16,000 - \$17,000 plus benefits. Send resume and cover letter to: Elly Walters, Animal Division, North Carolina Zoological Park, Rt. 4, Box 83, Asheboro, NC 27203.

**ZOOKEEPER ASSISTANT (Bird Dept.)**...opportunity to participate in incubator/brooder facilities and off-exhibit avian propagation facility. Includes care of extensive bird collection and maintenance of exhibits. Requires high school diploma and/or biology degree or minimum of 1 year working experience. Starting salary \$18,220.00 per year with benefits. **Submit resume by 31 August 1993** to: Nancy Foley, Director of Human Resources, The Toledo Zoological Society, P.O. Box 4010, Toledo, OH 43609.

**SENIOR WILD ANIMAL KEEPER**...requires a degree in animal science, 3-5 years experience (at least one year in a position of responsibility) caring for small mammals and birds in a zoo environment, and a valid driver's license. Some reptile experience desired. Will perform hands-on animal care and oversee the work of keepers in animal facility at the Central Park Wildlife Conservation Center in Manhattan. A competitive salary is offered. Generous benefits package includes health, dental, vacation and retirement plans. Send resume to: John Fairbairn, Human Resources, NYZS The Wildlife Conservation Society, 2300 Southern Blvd., Bronx, NY 10460. Call (718) 220-5119 with inquiries.

**ZOO FOREMAN**...small central Florida Zoo is seeking employee to care for animal collection. Fifty-plus species, 100-plus animals -- jaguars, tigers, Florida panthers, crocodiles, primates, birds, others. Also will supervise laboratory students for new style zoo management school. One to two years experience required -- some basic handyman skills helpful. Salary \$7.50 per hour plus health insurance and paid vacation. Send resume to: Zoo Foreman, Box 2319, Belleview, FL 34421.

The following three (3) positions are available at the Fort Worth Zoo. For all positions send letter, resume, and references **by 30 September** to: Wanda Smallwood, Personnel Dept., City of Fort Worth, 1000 Throckmorton St., Fort Worth, TX 76102.

**ZOO ATTENDANT II - Herpetologist**...requires minimum of one year paid experience in the care of reptiles and amphibians, including venomous species. Preference will be given to candidates who demonstrate a strong interest and background in lizard husbandry and propagation and those who have earned a Bachelors degree with a major in Zoology or related field.

**ZOO ATTENDANT II - Elephants**...requires high school diploma and one year's salaried experience in the care of elephants. Experience with multiple cow breeding program desired. Will participate in all aspects of the Asian elephant breeding program involving multiple bulls (protected) and a cow herd (free contact). Duties include normal elephant handling and maintenance as well as extensive record keeping.

**ZOO ATTENDANT I - Birds**...requires an individual with an interest and dedication in aviculture in a Zoological Park setting. Experience and/or degree preferred.



# AAZK Membership Application

Name \_\_\_\_\_ check here if renewal [ ]

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City \_\_\_\_\_ State/Province \_\_\_\_\_ Zip \_\_\_\_\_

## U.S. Members

- \$30.00 Professional/U.S.  
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*Other staff & volunteers*
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*Those not connected with  
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- \$50.00 or up Contributing/U.S.  
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- \$50.00 or up Institutional/U.S.  
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(requires Board approval)*

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*Other staff & volunteers*
- \$30.00 Associate/Canada  
*Those not connected with  
an animal facility*
- \$55.00 or up Contributing/Canada  
*Individuals*
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(requires Board approval)*

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- \$40.00 International  
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- \$20.00 Library  
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Zoo Address \_\_\_\_\_

Title \_\_\_\_\_

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Signature \_\_\_\_\_

Mail this application to : AAZK Administrative Offices, Topeka Zoo, 635 S.W. Gage Blvd., Topeka, KS 66606-2066 U.S.A. Make checks/money orders payable to AAZK, Inc. Must be in U.S. FUNDS ONLY.

Membership includes a subscription to *Animal Keepers' Forum*. The membership card is good for free admission to many zoos and aquariums in the U.S. and Canada.

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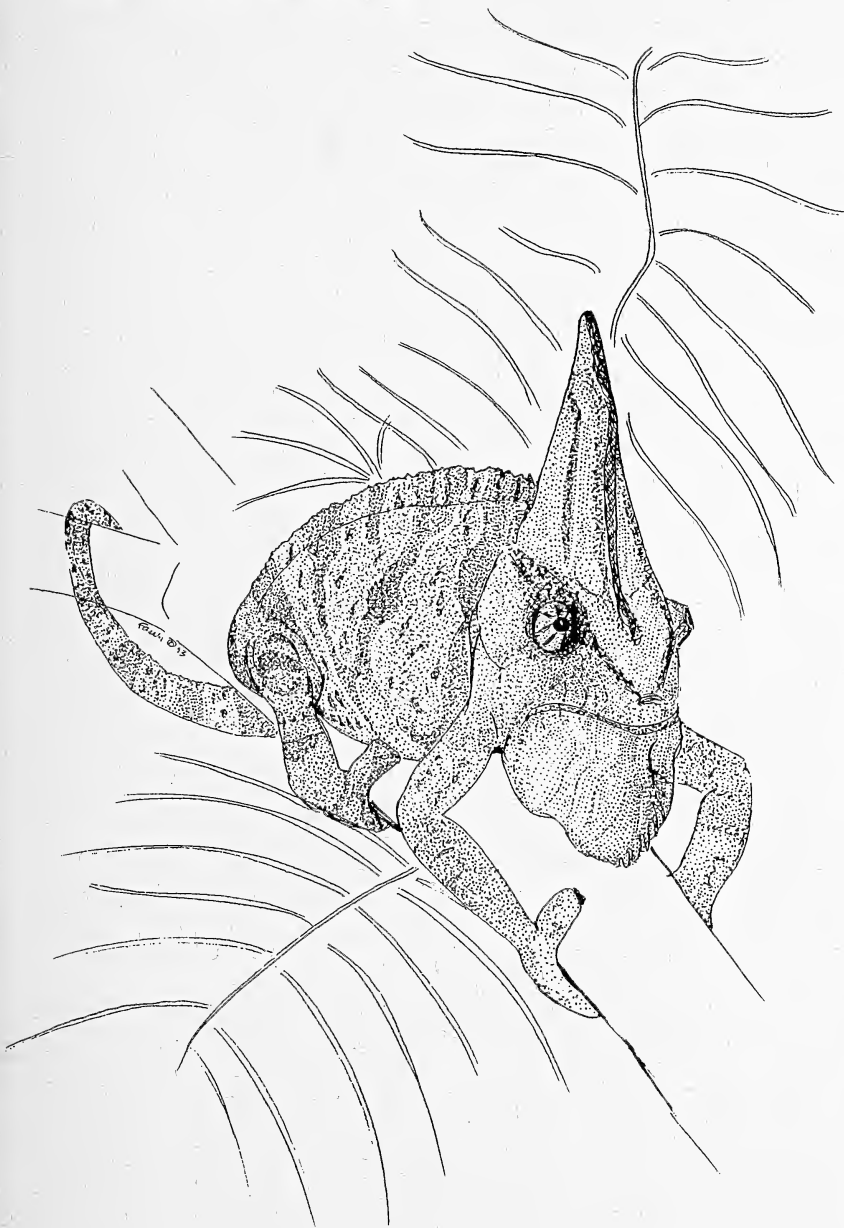
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# Animal Keepers' Forum

September 1993



*Dedicated to Professional Animal Care*

ANIMAL KEEPERS' FORUM, 635 S.W. Gage Blvd., Topeka, KS 66606  
Phone: 1-800-242-4519 (U.S.) 1-800-468-1966 (Canada) FAX 913-273-1980

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**Associate Editors:** Kayla Grams & Gretchen Ziegler

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### AAZK PUBLICATIONS : CONTINUING DATA COLLECTION

Zoo Infant Development Project - Harmony Frazier-Taylor, Woodland Park Zoo

Diet Notebook, Mammals, Vol. II - Susan Bunn Spencer, Bronx Zoo



printed on recycled paper



## Table of Contents

|  |             |
|--|-------------|
| Scoops & Scuttlebutt.....  | 298 - 300   |
| Coming Events.....   | 301 - 302   |
| African Wildlife Update Newsletter Info.....   | 302         |
| Births & Hatchings.....  | 304         |
| AAZK Library Resources Project Order Form.....   | 305         |
| Spring Break '93 - A Different Vision of Paradise.....   | 306 - 307   |
| Enrichment Options (Primates and Bats).....  | 308 - 309   |
| U.S. Helps Protect Nicaragua's Vast Sea Sanctuary.....   | 310         |
| Private Land Donation Largest in Conservation History.....   | 312 - 313   |
| UFAW Zoo Animal Welfare Award 1993/Zu/Preem Exotic Food Line Under New Company.....                      | 313         |
| Legislative Outlook.....   | 314 - 316   |
| Death of Dr. David Fleay/Information Please (river otters, ratite diets, hand-rearing fishing cats)..... | 316         |
| Elephant Set (Internal Diseases Part III).....   | 317 - 318   |
| AAZK Announces New Professional/Contributing Members.....  | 318         |
| Chapter News.....  | 319 - 321   |
| Rwandan Civil War Ends/Peace Treaty Signed.....  | 321         |
| An Inexpensive Simulated Thundershower for Small Enclosures.....   | 322 - 323   |
| Occurrence of <i>Diocotophyme renale</i> in Maned Wolves.....  | 324 - 329   |
| Wisconsin Primate Center Offers Audio Visual Catalog and Directory of Primatology.....                   | 329         |
| Association of British Wild Animal Keepers, An Historical Overview.....                                  | 330 - 331   |
| Book Reviews.....  | 332 - 333   |
| LINK List of Regional Coordinators.....  | 334         |
| Opportunity Knocks.....  | 335 - 336   |
| Conference '93 (Workshops, Airport Transport, Registration Form, Highlights).....                        | GOLD INSERT |

### Information for Contributors

Animal Keepers' Forum publishes original papers and news items of interest to the animal keeping profession. Non-members are welcome to submit articles for consideration.

Articles should be typed or hand-printed and double-spaced. All illustrations, graphs, charts and tables should be clearly marked, in final form, and should fit in a page size **no greater than** 15cm x 25 1/2cm (6" x 10"). Literature used should be cited in the text (Brown, 1986) and alphabetically in final bibliography. Avoid footnotes. Include scientific name of species (as per ISIS) the first time it is used. Thereafter use common name. Use metric system for weights and measurements (standard equivalents may be noted in parenthesis). Use the continental dating system (day-month-year). Times should be listed as per the 24-hour clock (0800, 1630 hrs. etc.) Black and white photos only are accepted. Color slides should be converted to black and white prints (minimum size 3 x 5 inch) before submission. Clearly marked captions should accompany photos. Please list photo credit.

Articles sent to Animal Keepers' Forum will be reviewed by the editorial staff for publication. Articles of a research or technical nature will be submitted to one or more of the zoo professionals who serve as referees for AKE. No commitment is made to the author, but an effort will be made to publish articles as soon as possible. Lengthy articles may be separated into monthly installments at the discretion of the editor. The editor reserves the right to edit material without consultation unless approval is requested in writing by the author. Materials submitted will not be returned unless accompanied by a stamped, self-addressed envelope. Telephone or FAX contributions of late-breaking news or last-minute insertions are accepted. However, long articles must be sent by U.S. mail. The phone number is (913) 272-5821 Ext. 31.

### DEADLINE FOR EACH EDITION IS THE 15TH OF THE PRECEDING MONTH

Articles printed do not necessarily reflect the opinions of the Animal Keepers' Forum editorial staff or the American Association of Zoo Keepers, Inc. Publication does not indicate endorsement by the Association.

Items in this publication may be reprinted providing credit to this publication is given and a copy of the reprinted material is forwarded to the editor. Reprints of material appearing in this journal may be ordered from the editor. Back issues are available for \$2.00 each.

This month's cover features the Veiled Cameleon (*Chamaeleo calytratus*) drawn by Fawn Prevost, a Keeper in the Tropical Rainforest Building at the Topeka Zoological Park, Topeka, KS. This species inhabits inland river valleys of Yemen and southern Saudi Arabia. Males always have a larger body (12-19") than the females (10-14"), and the males have a casque or head crest at maturity. The bold vertical body bands are primarily bright gold, green and blue mixed with yellow, orange or black. Species matures at about 5 months and females may lay eggs (30-100/clutch) 3-4 times a year. Both sexes are shy and tenacious. Thanks, Fawn!

## Scoops

and

## Scuttlebutt

### AAZK Research Grant Announced/1994 Grants Available

The AAZK Research/Grants Committee proudly announces their award of \$750.00 to Elizabeth A. Pyle, Assistant Supervisor at Omaha's Henry Doorly Zoo. Elizabeth's project is titled "Non-invasive hormonal characterization of the estrous cycle and pregnancy in tapirs, *Tapirus indicus*, and *Tapirus terrestris*." Congratulations, Elizabeth!

The American Association of Zoo Keepers, Inc. announces the availability of two \$750.00 research grants in the field of zoo biology. Interested applicants should direct their inquiries to Sue Barnard, Chairperson, AAZK Research/Grants Committee, Zoo Atlanta, Department of Herpetology, 800 Cherokee Ave., SE, Atlanta, GA 30315. The deadline for submissions is 1 March 1994.

### National Aquarium's Conservation Parking Meter Tops \$1000,000

--submitted by Rosemary Krussman, ESP Program Associate

On 28 July 1993, twenty-eight months after its installation, The National Aquarium in Baltimore's Conservation Parking Meter raised its 100,000th dollar.

From the time of its unveiling on 3 April, 1991 through March of 1993, the funds raised through the Aquarium's Conservation Parking Meter were donated to protect the Rio Bravo Conservation Area in Belize. Since April of this year, funds generated by the meter have been directed to support the Talamanca Biological Corridor within LaAmistad Biosphere Reserve in Costa Rica.

These funds, combined with funds from the growing number of Conservation Parking Meters churning away nationwide, have helped The Ecosystem Survival Plan raise a quarter of a million dollars for rain forest conservation. Congratulations to all involved!

For more information about the Ecosystem Survival Plan and its Conservation Parking Meter Program, please contact: Norm Gershenz, ESP Director, San Francisco Zoo, 1 Zoo Road, San Francisco, CA 94132.

### Yugoslavian Zoo Assistance Update

In the July issue of *AKF* (p. 228) the AAZK membership was made aware of a plea from Ignacije Tonkovic, Director of the Palic Zoo, for assistance in helping the animals caught up in this war-ravaged country. AAZK President Ed Hansen suggested that any individuals or Chapters interested in helping out should contact Mr. Tonkovic directly. We have received further correspondence from Mr. Tonkovic concerning the restrictions on donations due to the United Nations sanctions placed on Yugoslavia. Please make note of this information if you want to offer assistance, donations, etc.

### Scoops & Scuttlebutt, *Continued*

From R. Richard Newcomb, Director, Office of Foreign Assets Control, U.S. Dept. of the Treasury: "This is in response to your letter ...concerning assistance by U.S. persons to the Palic-Zoo, Palic, Yugoslavia, the Federal Republic of Yugoslavia, (Serbia and Montenegro) ["Yugoslavia"].

Section 2(b) of Executive Order No. 12810 of 5 June 1992, prohibits the exportation to Yugoslavia, directly or indirectly, of any goods, technology (including technical data or other information controlled for export pursuant to the Export Administration Regulations, 15 C.F.R. Parts 768, et seq.), or services, from the United States, or any activity that promotes or is intended to promote such exportation. However, the Office of Foreign Assets Control ("FAC"), will consider on a case-by-case basis, the issuance of specific licenses to permit the donation or sale of humanitarian goods to Yugoslavia. Persons subject to U.S. jurisdiction, i.e., U.S. non-profit organizations, U.S. companies, etc. who wish to export humanitarian goods to Yugoslavia must contact this Office for information concerning FAC's license application guidelines and requirements."

Pertinent addresses are: Mr. Ignacije Tonkovic, Zoo, Krfska 4, 24413 Palic, Yojvodina, Yugoslavia and Mr. R. Richard Newcomb, Director, Office of Foreign Assets Control, Department of the Treasury, 1500 Pennsylvania Ave., NW, Washington, DC 20220.

### Association Seeking to Expand Keeper Accommodation List (KAL)

AAZK is seeking to expand the listing of the current Keeper Accommodation List (KAL). For those unfamiliar with this project, the KAL is a list of keepers or other zoo staff/volunteers who are willing to "put up" a traveling keeper. The idea behind the project was not only to help make keeper travel more economical, but also to encourage opportunities for keepers from many places to interact and share information about their profession. By agreeing to be a KAL contact, an individual is certainly not committed to hosting every keeper who travels through their area - but at the convenience of the contact person and with whatever restrictions they care to require (i.e. non-smokers only, must bring sleeping bag, no pets, etc.) Contacts are not required to provide meals for traveling keepers, although many contacts enjoy doing this. The current list, representing 53 facilities, includes contacts in 29 States, 3 Canadian Provinces, Holland, India, Australia and Japan. States included are: AL, AZ, AR, CA, CO, FL, GA, IL, KS, KY, LA, MA, MD, MI, MN, MS, MO, NE, NY, OH, OK, OR, PA, RI, TN, TX, UT, WI, and WA. Provinces are: Alberta, Manitoba and Ontario.

If you would be interested in being a KAL contact in your area, please call Barbara or Susan at AAZK Administrative Offices in Topeka (1-800-242-4519 for U.S., 1-800-468-1966 for Canada) or write at 635 S.W. Gage Blvd., Topeka, KS 66606-2066.

### Central Florida Chapter Seeking Support for Guatemala Uniform Project

--submitted by Barbara Shurman, Senior Aviculturist, Sea World of Florida

Barbara Shurman, a member of the Central Florida Chapter of AAZK, has begun a project to buy keepers at the Petencito Zoo in Guatemala some uniform shirts. So far, through generous donations from the Central Florida and Suncoast AAZK Chapters, as well as the Bermuda Zoo & Aquarium, we have raised \$270.00. Our goal is \$900.00 in order to buy some decent shirts (polo/three button type/5 shirts for each of the 12 keepers) so that these keepers can be recognized at the zoo as professionals and be proud to wear "the uniform".

The shirts would have a Jaguar on the front; this artwork was featured on the cover of the July 1993 *AKF* and was drawn by Kiran Moktan, a foreign sponsored keeper from India (sponsored by the Rocky Mountain Chapter, Denver, CO). If each AAZK Chapter could send \$10 or \$20, it would show our fellow keepers that we are all working together for a common goal, no matter where in the world we live. If you or your Chapter would like to help out with this project, donations should be made payable to Central Florida AAZK and sent to: Barbara Shurman, 4813 Oakbrooke Pl., Orlando, FL 32812.

**ADT Forms Available Upon Request**

Animal Data Transfer Forms for zoos and aquariums are available free of charge upon request. This is a professional service provided by AAZK. Contact: Bernie Feldman, Burnet Park Zoo, 1 Conservation Place, Syracuse, NY 13204. If your facility is not already using the ADT form, please encourage your administration to implement its use whenever an animal is shipped.

**AAZK Project Position Available**

The AAZK would like to announce the availability of a Co-Cordinator position due to the resignation of the current Co-coordinator. The duties include collaboration with education professionals to develop a package of AAZK, Inc. materials for use as a resource for *in situ* keeper training programs. The potential candidate must be an AAZK, Inc. member continuing in 'good standing' with the Association, send a resume to the Board Overseer (Rachel Watkins Rogers), and receive AAZK Board approval.

The desired qualifications for this position are good communication skills, computer literacy, and some background in keeper training (i.e. train new keepers at work, lecture for educational programs and adequate experience with current professional philosophies of modern-day zoo keepers). For further details, please write: Rachel Watkins Rogers, AAZK Board Overseer, San Diego Zoo/Mammal Dept., P.O. Box 551, San Diego, CA 92112-0551.



***In Memory of  
Charlene Torre  
1968-1993***

Charlene (Char-lee) Torre, an Asian Domain elephant keeper at the Lowry Park Zoo, Tampa, FL, was fatally injured by a female Asian elephant on the morning of 30 July 1993. She and another keeper were unchaining the elephants in the barn to be led out to their yard when the accident occurred.

Charlene had been at Lowry Park Zoo nearly a year at the time of her death. She was 25 years old.

AAZK, Inc. wishes to express its sincere condolences to her family, friends and co-workers.

# Coming Events

## The Mid-Atlantic Reptile Show

September 25-26, 1993

Baltimore, MD

Sponsored by the Maryland Herpetological Society, all proceeds from this show will go to the Ecosystem Survival Plan for purchase of rainforest land in Costa Rica. Show will feature captive born reptiles only, speakers and lectures as well as herpetological accessories and books. Keynote Speaker is Dr. Roger Conant. For further information contact: Tim Hoen, Johns Hopkins University, Jenkins Hall/Biophysics, 34th and Charles St., Baltimore, MD 21218 - (410) 557-6879.

## 11th Annual Association of Zoo Veterinary Technicians Conference

Oct. 5-9, 1993

St. Louis, MO

To be held at the St. Louis Zoological Gardens. For more information contact: Barbara Jenness, St. Louis Zoo, One Government Dr., St. Louis, MO 63110 (314) 781-0900 or Virginia Crossett, Louisville Zoo, P.O. Box 37250, Louisville, KY 40233 (502) 459-2181.

## 1993 Annual Meeting of the American Association of Zoo Veterinarians

October 10-15, 1993

St. Louis, MO

For conference information contact Wilbur Amand, DVM, AAZV Executive Director, 3400 Girard Ave., Philadelphia, PA 19104-1196; phone (215) 387-9094; FAX (215) 387-8733.

## The 16th Annual IWRC Conference

October 14-17, 1993

Lake Tahoe, NV

Theme: Wildlife Rehabilitation: A Perpetual Learning Process. Will include Skills Seminars on Basic Wildlife Rehabilitation IAB and an Advanced Skills Seminar on Gross Pathology & Clinical Pathology. Also includes a field trip to Lake Mono and a day trip to Virginia City. Paper topics will cover administration/education, avian, mammals, reptiles and veterinary medicine. There will also be hand-on workshops on such topics as making raptor hoods and basic necropsies, and round table discussion groups. For more information contact IWRC at (707) 864-1761 M-F 9 a.m.-4 p.m.

## National Symposium on Urban Wildlife

October 22-26, 1993

Seattle, WA

For further information contact Dr. Lowell Adams, National Institute for Urban Wildlife, 10921 Trotting Ridge Way, Columbia, MD 21044 (301) 596-3311. To be held at Embassy Suites Hotel, Seattle-Bellevue, WA.

## International Marine Animal Trainers Association 21st Annual Conference

November 7-12, 1993

Kailua-Kona, HI

Hosted by Dolphin Quest and headquartered at the King Kamehameha Hotel on the big island of Hawaii. For further information contact Julie Scardina-Ludwig, 1st Vice Pres., c/o Sea World of California, 1720 S. Shores Road, San Diego, CA 92109.

## Coming Events, *Continued*

### Second National Watchable Wildlife Conference

November 11-13, 1993

Corpus Christi, TX

Co-sponsored by 13 private, State and Federal conservation agencies/associations, this conference aims at promoting watchable wildlife as an important conservation goal. Will include speakers, panel discussions, interactive sessions and optional field trips including visits to Aransas National Wildlife Refuge and Padre Island National Seashore. For further information contact National Watchable Wildlife Conference at 400 Mann, Suite 909, Corpus Cristi, TX 78401.

### International Conference on Orang-utans: The Neglected Ape

March 5-8, 1994

Fullerton, CA

An International Conference on Orang-utans: The Neglected Ape will be co-hosted by the California State University, Fullerton; the Zoological Society of San Diego; and the Atlanta/Fulton County Zoo Inc. Paper and poster presentations are scheduled for 5-7 March, in Fullerton, CA, followed by a post-conference trip to the San Diego Zoo on 8 March, with attendees participating in workshops and tours. For registration information and abstract guidelines, please contact: Norm Rosen, Dept. of Anthropology, California State University, Fullerton, CA 92634-9480, FAX: 310-798-0576.

### ARAZPA/ASZK Annual Conference

April 17-22, 1994

Darwin, NT, Australia

Joint meeting of the Australasian Regional Association of Zoo Parks and Aquaria and the Australasian Society of Zoo Keepers will be hosted by Territory Wildlife Park and Tipperary Sanctuary. For further information contact: Michelle Nuske, Conference Coordinator, Territory Wildlife Park, P.O. Box 771, Palmerston, NT 0831, Australia.

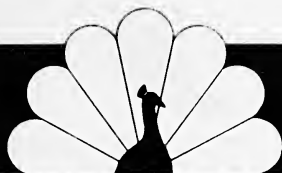


## African Wildlife Update Offers **Current Information on African Wildlife Conservation Issues**

If you have not had an opportunity to view an issue of the African Wildlife Update newsletter, you are missing a great resource for current information on the wildlife conservation scene on the African continent. Published bimonthly by the African Wildlife News Service, a non-profit, all-volunteer organization, this graphically attractive publication began in 1992 and provides a wealth of information on what is happening with various African species, what conservation programs are attempting to do to preserve the area's flora and fauna, etc. The most recent (July/Aug) issue contains articles on the following: Update on Karisoke Research Center in Rwanda, Zimbabwe Plans for Elephant Translocation, Protection of the Tana River Delta, Angolan Plan for Captive Breeding of Giant Sable, Rhino Conservation, A Gene Safari: Tracking Kenya's Wildlife for its DNA, Zambia's Ivory Ban and more.

Individuals may receive this publication by making a contribution to help cover costs of their news-gathering efforts. A minimum contribution of \$15.00 is required to receive African Wildlife Update (Contributors living outside North America should add \$7 for air mail postage). Limited back issues are available for \$2.00 each. Categories of support include: Contributor \$15-24; Institution (Library/Zoo, etc.) \$15.00; Supporter \$25-49; Sponsor \$50-99; News Hound \$100-249; and Editor's Circle \$250 or more. All but \$5.00 of your contribution is tax-deductible to the extent allowed by law. Send your name and complete mailing address along with a check or money order in U.S. Funds) made payable to "African Wildlife News Service" to: African Wildlife News Service, P.O. Box 546, Olympia, WA 98507-0546, USA.



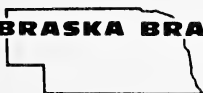


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# Births & Hatchings



**Honolulu Zoo...**announces the following significant B&H from July 1992 through June 1993:

**Mammals** - 0.1 White-handed gibbon (*Hylobates lar*) [E]; 2.0 Black and white ruffed lemur (*Lemur variegatus varietagus*) [E]; 5.0 Ring-tail lemur (*Lemur catta*) [E - 2.0 DNS]; 2.3 Cheetah (*Acinonyx jubatus*) [E/SSP - 0.1 DNS]; 3.0.4 Grey gray kangaroo (*Macropus giganteus*) [T - 0.0.1 DNS].

**Birds** - 5.4 Nene (*Branta sandvicensis*) [E]; 1.0.4 Superb bird-of-paradise (*Lophorina superba*) [T]; 0.0.2 Raggiana bird-of-paradise (*Paradisaea raggiana*) [T - 0.0.1 DNS]; 0.0.2 Toco toucan (*Ramphastos toco*) [1st hatch in zoo]; 0.0.1 Nicobar pigeon (*Laloenas nicobarica nicobarica*) [E]; 0.0.1.0 Jackass penguin (*Spheniscus demersus*) [T - 0.0.1 DNS]; 0.0.1 Inca tern (*Larosterna inca*) [1st hatch in zoo].

**Reptiles** - 0.0.1.7 Yellow-spotted Amazon river turtle (*Podocnemis unifilis*) [T - 0.0.1 DNS]; 0.0.1.2 African spurred tortoise (*Geochelone sulcata*) [T]; and 0.0.1 Mauritius day gecko (*Phelsuma cepediana*) [T]. *submitted by Susan Brant, Secretary, AAZK Honolulu Chapter, Honolulu, HI.*

**Metro Toronto Zoo (Toronto, Ont., Canada)**...announces the following significant B&H since spring 1993:

**Mammals** - 0.0.1 Matschie's tree kangaroo (*Dendrolagus matschiei*) [SSP; 1st for Zoo]; 1.0 Leadbeater's possum (*Gymnobelideus leadbeateri*) [E]; 1.1.1 Snow leopard (*Panthera uncia*) [E/SSP] [0.1 survived]; 1.2.3 Black footed ferret (*Mustela nigripes*) [E] [DNS]; 2.2 Wart hogs (*Phacochoerus aethiopicus*) [1st to survive at Zoo].

**Birds** - 0.0.1 Greater flamingo (*Phoenicopterus roseus*) [1st for Zoo].

**Fish** - ± 80 *Oreochromis esculentus* [SSP]. *submitted by Eric Cole, Metro Toronto AAZK Chapter Liaison.*

**Exotic Feline Breeding Compound (Rosamond, CA)**...reports the following significant births:

**Mammals** - on 5 July, 1993, 2.0 North Chinese leopard (*Panthera pardus japonensis*). 1.0 was rejected by dam (after a long labor with the second birth which DNS) and is being hand-raised. This is the first, second generation North Chinese leopard born at EFBC. This new blood line has no inbreeding quotient.

On 11 July 1993, 0.1 Fishing cat (*Felis viverrinus*) was born, pulled for hand-rearing, dam rejected. The cub was found swimming in the pond with all three adults looking on trying to 'fish' her out.

On 1 August 1993, 1.1 Fishing cat (*Felis viverrinus*) born, pulled for hand-rearing, dam rejected. The first-born female of the second litter was found alone on the ground of their exhibit. The male was born three hours later and fell out of the nesting box three times before we pulled him from the dam. Neither dam was aggressive nor interested in her young.

These Fishing cat births have doubled our population within a year of acquiring the adults. The females are from the Cincinnati Zoo, Cincinnati, OH, and the male is from the Howletts Zoo, United Kingdom. --submitted by Jeanne Maynard, EFBC.





# AAZK Library Resources Project

Do you need to find information about an animal or other zoo-related topic and don't know where to look?

Maybe the AAZK Library Resources Project can help you.

We have compiled a huge computer database of bibliographies and other sources of information for a wide variety of topics dealing with zoos. You will be provided with individual references as well as sources of bibliographies telling you where to get them. Just fill out the form and we'll try to help you. The cost is 25 cents per printed page, with a minimum of \$2.00. Don't enclose money. We will bill you.

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Please fill out and return to:



Marilyn Cole, Chair  
AAZK Library Resources Committee  
c/o Metro Toronto Zoo  
Box 280  
West Hill, Ontario M1E 4R5  
Canada

# *Spring Break '93*

## *A Different Vision of Paradise*

*By Andrew Henderson, Keeper  
Lincoln Park Zoo, Chicago, IL*

Hanging out on a crowded beach under a scorching sun, drinking too much beer, surrounded by obnoxious sunburned muscleheads and scantily-clad bimbos. This must be paradise! NOT!!! I prefer an alternative view of paradise. This year I was fortunate enough to visit the Ngare Sergoi Rhino Sanctuary at Lewa Downs in Kenya. I persuaded my friend Debra Paley, a top fundraiser of "Bowling for Rhinos '92", to take me as her honored guest. We were joined by Cara Lance of Indianapolis (the big money maker) and Patrick Eichorn. The trip was beyond my wildest dreams and instilled powerful images in my mind forever.

We arrived in Nairobi on 14 March 1992 and met Francis Dyer, the reserve manager, at the airport. With recent rains this was a good time to visit the area. The land looked lush and green and the animals were strong and healthy. We took a small plane to Lewa Downs where we saw elephant, ostrich and giraffe, just on the ride to Anna's. We met Anna, had a nice lunch and then took a ride to a small lake and walked the dogs. The view was breathtaking and the size and distance unfathomable. The weather was fantastic and stars extraordinary. We stayed in these cool guest houses with a view of Mt. Kenya past the garden. We could not venture past the garden at night, as Anna feared we would become prey of leopard. Imagine being held captive by wild animals, a zookeeper's dream or nightmare?

The next day we awoke before sunrise and before the roosters. We spent the morning in search of our horny friends. We first saw three black rhinos sleeping in the distance, then we saw three whites foraging in the tall grasses nearby. On the way back from lunch, we met Samia and two guides and Samia was happy to see Anna and came right up to the truck. Later we saw six whites grazing together and a black female with a calf, along with many warthog, baboon, zebra, giraffe, kongoni and waterbuck. The sheer number and variety of wildlife was spectacular.

We started the next day by searching for rhinos, then went to Ian and Jane Craig's house for lunch. After lunch, Ian drove us to an area where the elephants hang out and we were in the center of three herds of more than 70 elephants, many with young. We then went to William Craig's place, Wilderness Trails, and rode horses for a few hours in the bush where it was possible to get very close to the animals.

On Day 4, we made a journey to Mt. Kenya where Anna drove as far as the car could go, then we hiked further above the treeline; breathtaking and captivating, we were on top of the world. We traveled back to Lewa and visited the elephants in the swamp.

The next day, we went for a horseback ride in the Ngare Ndare Forest with Rose Dyer. We traveled through the bush and the mountains of the forest and saw a multitude of wildlife. Returned to Lewa to see some rhinos and elephants, then went to the Craig's for a lunch of guinea fowl. After lunch we played cricket in the garden and then went to a school that Ian built and supports. We brought boxes of paper and writing utensils from the U.S. The kids were extremely grateful, treated the pencils as if they were gold, and their marching band and chorus performed for us.

We spent the next day with Francis Dyer, who is the manager of the reserve. We learned all about the fence, security and game and people management. Lewa Downs is in the center of a volatile war zone, especially with the Somalis. Security is a huge issue, needing cooperation from the workers, the neighboring communities and the government agencies with strength in communication.

## Spring Break '93, *Continued*

The next day we took another horseback ride through another part of Ngare Ndare Forest with Rose and Tony Dyer. We later drove to Charlie's place - he runs the cattle operation at Lewa. Charlie took us deep into another part of the forest where we hiked to a spring-fed waterfall. We picnicked and swam in the cool, crisp water. Charlie later took us into the bush at night where we climbed a tree to see hyenas. It was great, yet spooky to be in the bush at night.

We spent the next day looking for rhinos. I am amazed at Anna's ability to look at a grey lump a mile away, distinguish it as a rhino and know which individual it was. I was further amazed by Anna's capability to pilot her four-wheel drive Suzuki everywhere and anywhere.

The next day was our last at Lewa so, of course, we spent it looking for rhinos. Saw five blacks (mother, baby, 2 adults and 1 sub adult) foraging together in the morning, shaking the theory of blacks being solitary. Close by we saw six whites hanging together, this is Rhino Heaven. All the animals at Lewa have the supreme life. The people of the reserve, European and African, care strongly for animals and work with their hearts and work together as a family.

It was tough to leave Lewa Downs, yet I was so grateful to be able to experience a land I've dreamt of. It was more incredible than I could ever have visualized. This is a far better method of preserving endangered species than keeping them in zoos. The reserve is expanding in size, in goals, in scope, in political strength, in security and has a growth potential far into the future.

After our good-byes, a driver took us for a long drive to Kenya Mountain Lodge. We stopped on the way at the Equator and did some bantering for trinkets. The Kenya Mt. Lodge is one of the poshest hotels in Africa. It is high in the mountains, surrounded by lush jungle. There are three balconies overlooking a huge waterhole where the animals parade back and forth to the waterhole and interact. It was great fun to watch a young bull elephant charging all the water buffalo. This is a rich man's version of a safari, safe and comfortable, where the animals come to you. At night they light up the waterhole and we sat back with cold Tuskers and watched the show. They bait a platform which brings out a civet cat, and the tourists get ecstatic when they see a rhino, and the owls and bats are phenomenal. On the way out in the morning we had a leopard running in front of our car, making sure that we saw a wild cat before leaving Africa. We spent the last day in Nairobi, a diverse and crowded city. I enjoyed the huge marketplace of African artifacts, but my favorite memory of Africa, which I hope to experience again some day, was spending the morning with Anna looking for rhinos.



## **UREP 1994 Expeditions Program**

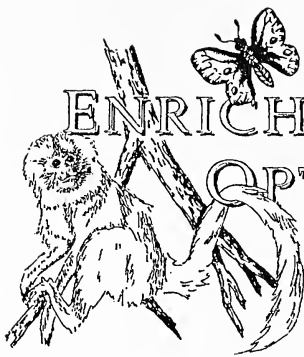
The University Research Expeditions Program out of the University of California-Berkeley is offering four programs during 1994. They include 1) Panama: Before and After Columbus; 2) Preserving Bio-diversity in Costa Rica; 3) Sanchi: Buddhist Art in India; and 4) Cretaceous Park: Dinosaurs of Utah. These research expeditions



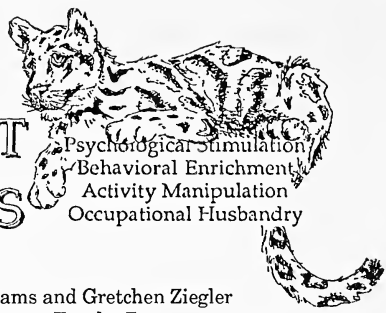
offer the opportunity for hands-on participation in a university-run research project. Field work is led by experts in each field. Length of expeditions vary but average two weeks. Participants pay a tax-deductible contribution to be part of the expedition. If you would like a catalogue explaining the 1994 programs, please send your name and complete mailing address and day/night telephone numbers to: UREP, University of California, Berkeley, CA 94720

UNIVERSITY OF CALIFORNIA





# ENRICHMENT OPTIONS



Psychological Stimulation  
Behavioral Enrichment  
Activity Manipulation  
Occupational Husbandry

by Kayla Grams and Gretchen Ziegler  
Keepers, Topeka Zoo

The First Environmental Enrichment Conference was held in Portland, OR in July. The conference was well attended by animal keepers, zoo managers, laboratory researchers, ethologists, behavioral psychologists, veterinarians, and other professionals. The conference was very informative and covered a wide array of topics, from the theoretical to the practical. Some issues were hotly debated, but in every paper, workshop, and discussion, one point was always clear: enrichment is no longer an "option". The idea that enrichment is a luxury that keepers indulge in if they have time is being replaced by a more progressive attitude. Enrichment is becoming as vital an aspect of zoo management as animal husbandry, veterinary care, exhibit design. Sophisticated enrichment application can actually be a means of achieving many zoo goals, and one speaker even suggested incorporating enrichment into a zoo's mission statement. We feel honored to have been a part of such an enlightening and productive conference, and we hope to share what we learned through this column. We were also happy for the chance to put faces with the names of some of our column contributors, and were encouraged by their support. Keep those ideas coming in!!!!

The National Conference of AAZK in Atlanta is just around the corner and we are planning to host another Enrichment Workshop along with Michelle Acuna from the Arizona Senora Desert Museum. We will be showing many enrichment videos, and we would like to invite anyone planning to attend the conference to bring along your enrichment devices, videos, pictures, or ideas for sharing at the workshop. Hope to see you there.

- Primates** - Potato sacks, old metal baking trays, cookie sheets, pans etc.(all aluminum).
- Wading pool filled with water, or sand for sand play.
- Newspapers, magazines, and phone books.
- Barrels, plastic and wood (can be expensive).
- Wooden boxes and crates, all sizes.
- Cream o Weber milk crates.
- Boomer Balls®, old footballs, old basketballs and old baseballs (but not in glass front cages).

--Carol Sharp, Keeper  
Hogle Zoo, Salt Lake City, Utah

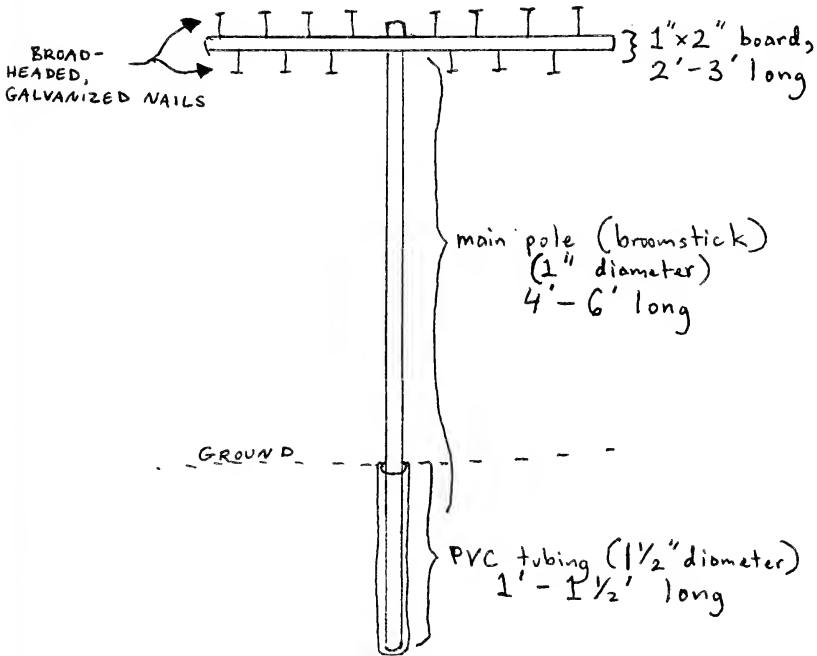
Enrichment Options, Continued

**The "Spinning Rake":**

Stimulating Foraging Behavior in Bats

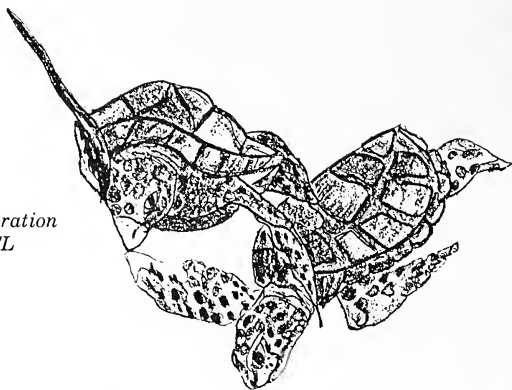
Dimensions may be varied according to exhibit size and size of species (see drawing). For more timid bat species, it may be necessary to temporarily inhibit rake movement while bats become accustomed to gleaning food items. This may be done by eliminating the PVC tube casing and burying the main pole directly into the substrate. After introducing the PVC tube casing, gradually increase the amount of rake movement by filling the space between main pole and PVC tube with foam or cotton. As bats become accustomed to rake movement, gradually remove padding. This design is suitable for frugivorous or omnivorous species that obtain their food by gleaning. Whole fruits or small animals (mice, insects, etc.) are impaled on nails to encourage bats to locate and remove food items.

--Becky Porter  
Discovery Place, Inc., Charlotte, NC



# U. S. Helps Protect Nicaragua's Vast Sea Sanctuary

*from Caribbean Conservation Corporation  
News Release, Gainesville, FL*



A \$1.3 million cooperative agreement with the U.S. Agency for International Development has given the Caribbean Conservation Corporation (CCC) a rare opportunity to help preserve one of the last unspoiled marine ecosystems in the Caribbean, the Miskito Coast of northeastern Nicaragua.

The area is very important to the U.S. because vast seagrass beds along the Miskito Coast are one of the world's richest spawning and nurturing grounds for lobster, fish, shrimp and other marine creatures that eventually ride ocean currents to North American coastal fishing grounds.

"The marine environment of the Miskito Coast is probably the most biologically productive in the Caribbean basin," said William Alevizon, CCC's project manager for the Miskito Coast Protected Area. "From an international conservation standpoint, it's invaluable because it contains some of the last almost totally pristine coastal habitats in the Caribbean, including coral reefs, mangroves and huge seagrass beds that remain largely untouched by tourism, coastal development or commercial exploitation."

The Miskito Coast also is the most significant feeding area in the Atlantic for endangered green turtles, which are on the brink of extinction. The area is unusually fertile because the continental shelf extends 30-40 miles offshore there, supporting an expansive underwater meadow of seagrass that fosters all kinds of marine life on the edge of the drop off to the cool, dark deep. This area is also an important foraging area for the endangered hawksbill and loggerhead sea turtles.

Endangered manatees and rare grey river dolphins also live in brackish lagoons ringed by flourishing mangrove forests along the Miskito Coast, while jaguars, tapirs, uncommon waterbirds and other threatened wildlife roam the area's lush pine savannas, gallery forests and vast wetlands. The coast is named for the indigenous Miskito Indians who have lived in balance with the environment for centuries. For them our concept of "conservation" is a traditional way of life.

Although the most immediate beneficiaries of the project will be the Miskito people, the impact of establishing the Miskito Coast Protected Area continues well beyond Nicaragua's borders, said David Carr, executive director of CCC. By integrating environmental and economic interests and promoting cooperation between indigenous peoples and national government, the Miskito Coast project could become an important model for marine resource conservation throughout Latin America, he said.

Over the next three years, Caribbean Conservation will provide facilities, equipment, initial staff and staff training for managers of the protected area; collect scientific information for a recommended management plan; involve resident Miskito communities in establishing and managing the protected area; and develop a Miskito fisheries cooperative to ensure sustained economic development through ecologically sound harvesting of the area's rich fisheries.



# PLEASE DON'T FEED THE ANIMALS

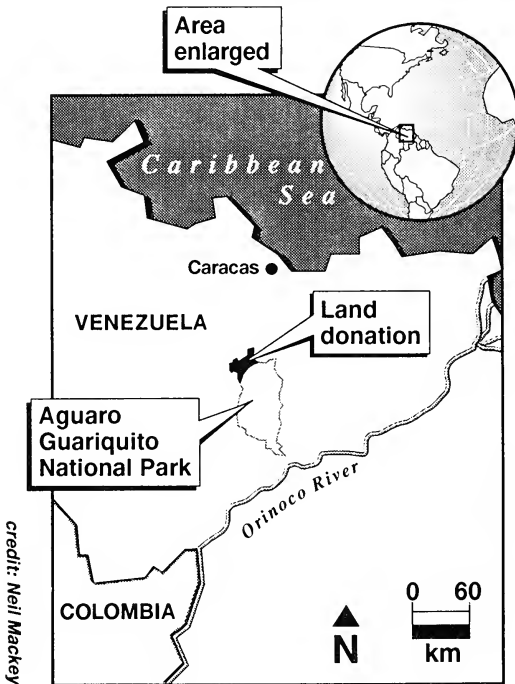
unless, of course, you're feeding them Zu/Preem animal diets. No other brand offers zoo animals better nutrition, which shouldn't be surprising when you consider that Zu/Preem developer, Mark L. Morris Jr., DVM, has dedicated the past 30 years to improving the lives of animals through proper nutrition. A commitment that is now being continued by Premium Nutritional Products and its president, David Morris. To order or learn more about Zu/Preem contact your distributor. Or call PNP at 1-800-345-4767.

**Zu/Preem**

## Private Land Donation Largest in Conservation History

In the largest private donation of land in conservation history, an anonymous donor from Virginia gave a 185,558-acre parcel of land located in Venezuela to The Nature Conservancy. When it was purchased in 1988, the land was intended for use as a cattle and rice operation. The Nature Conservancy had transferred the deed to the property to the Venezuelan National Park Service (INPARQUES).

Located in north central Venezuela (see map) and six hours south of Caracas, the property -- about the size of New York City--is one of the few remnants of upper savannah grassland, which once spread uninterrupted from the eastern face of the Andes mountains in Colombia and Venezuela to the northwestern border of Brazil. The landscape is characterized by a mosaic of various types of plant communities, including seasonal savannahs, gallery, deciduous and palm forests.



Unlike other savannahs, the relatively pristine property retains many species native to the region. The crystalline rivers are home to giant river otters, river dolphins, scarlet ibises, wood storks, spoonbills and spectacled caimans. The forests house giant anteaters, ocelots, jaguars, parrots, macaws and crab-eating foxes. The world's largest rodent, the capybara, is also found on the property.

According to Cristina Garcia Kirkbride, the Conservancy's Venezuela program director, the property will be incorporated into the adjacent Aguaro Guariquito National Park. The Park, which forms the eastern boundary of the property, is 1.5 million acres and contains 90



### **Private Land Donation Largest in Conservation History, Continued**

private ranches and small villages. It was established in 1974, but this will be the first property to be owned outright by the Venezuelan National Park Service for a park.

The Conservancy will work with INPARQUES to develop a comprehensive management plan for Aguaro Guariquito, which will include infrastructure improvements, training, education, and compatible use of natural resources.

>The Nature Conservancy News Release 8/93



### **UFAW Zoo Animal Welfare Award 1993**

The Universities Federation for Animal Welfare (UFAW) presented its 1993 Zoo Animal Welfare Award to the Jersey Wildlife Preservation Trust for its enclosure - The Twilight World of the Aye Aye. The exhibit incorporates features that provide these unusual and highly endangered primates from Madagascar with a complex and stimulating environment which helps meet both their physical and psychological needs. The exhibit provides a nocturnal and humid environment similar to that found in their native habitat.

Each cage features natural wood for both climbing and foraging, ropes, moveable feeding sites and a choice of nests.

The second, smaller Zoo Animal Welfare Award for an innovative idea or piece of equipment which improves the animal's welfare was presented to the Wildfowl and Wetlands Centre at Martin Mere for their use of rubber mats in brooders for young waterfowl. The deep pile rubber car mats enable water and waste to drain away, while at the same time providing a comfortable and safe surface on which to stand or sit. These rubber mats also keep ducklings warm and reduce the risk of disease.

UFAW launched these awards in 1987 to improve animal welfare in zoos by encouraging new and improved exhibits where animals live in as natural an environment as possible, and where observers are given a greater insight into the behavior and lifestyle of the species. UFAW is an internationally recognized scientific and educational charity which aims to improve the welfare of animals kept in zoos, on farms, in laboratories and as pets.

>Universities Federation for Animal Welfare Press Release 22 July 1993



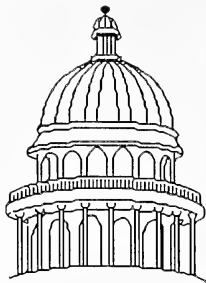
### **Zu/Preem Exotic Food Line Under New Company**

The manufacture and marketing of the Zu/Preem® line of food products for exotic animals has been assumed by Premium Nutrition Products, Inc. a company formed by David R. Morris, the son and grandson of Mark L. Morris, Jr., DVM, and Mark L. Morris, Sr., DVM, respectively. Zu/Preem®, one of the first brands of food for exotic animals, was developed in 1986 by Dr. Mark L. Morris, Jr., Zu/Preem® has been marketed by Hill's Pet Nutrition for 25 years, and the company will continue to renew contracts and distribute the products. Zoo/Preem® diets include those for primates, marmosets, felines and omnivores.



# Legislative Outlook

Compiled by  
Phyllis Nilson-Wojcik  
Legislative Advisor



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## Comments Sought on Marine Mammal Animal Welfare Standards

The U.S. Department of Agriculture (USDA) is considering revision of Animal Welfare Act standards for the humane care and transportation of marine mammals used for exhibition and research. Dale F. Schwindaman, deputy administrator of regulatory enforcement and animal care in USDA's Animal and Plant Health Inspection Service (APHIS) noted that "During the nine years since the standards were amended, advances have been made, new information has been developed and new concepts have been implemented concerning the housing and care of marine mammals. We are therefore, soliciting comments on appropriate changes or additions to the present marine mammal standards."

APHIS is the federal agency responsible for the humane handling, housing, care, treatment, and transportation of marine mammals used for research and exhibition. Standards for the treatment of marine mammals were adopted in 1979 and amended in 1984.

As part of the review of the standards, the public is also being invited to respond to the following questions:

--Should APHIS establish ambient air and water temperature ranges for each species in both indoor and outdoor facilities? If so, what should these temperature ranges be?

--Should the regulations consider the effect of noise on animals? If so, what levels of noise would be acceptable?

--Should APHIS allow public contact with marine mammals, including programs such as "Swim-with-the-Dolphin"? If so, under what circumstances should contact be allowed?

--Should APHIS require additional recordkeeping in the areas of behavior, food intake, and veterinary care? If so, what recordkeeping should be required?

--Should APHIS allow solitary confinement of marine mammals?

--Is the currently required coliform test for water quality adequate? What test methods should APHIS allow? Should APHIS establish pH ranges by species? If so, what ranges would be acceptable?

If the APHIS animal care staff determines after review of the comments that the standards for marine mammals should be revised, the proposed standards will be published at a later date for public comment.

Comments will be considered if received by **6 October 1993** and should refer to docket number 93-076-1. An original and three copies should be sent to: Chief Regulatory Analysis and Development, PPD, APHIS, USDA, Room 804 Federal Building, 65405 Belcrest Rd., Hyattsville, MD 20782. Comments received may be reviewed at USDA, Room 1141, South Building, 14th St. and Independence Ave. SW, Washington, DC, between 8 a.m.- 4:30 p.m.

## **Legislative Outlook**, *Continued*

M-F, except holidays. For further information contact: R.L. Crawford, assistant deputy administrator, animal care, REAC. APHIS. USDA, Room, 554, Federal Bldg., 6505 Belcrest Rd., Hyattsville, MD 20782 (301) 436-4981.

>USDA News Release

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### **Wetlands Projects Approved**

In late July the Migratory Bird Conservation Commission approved the purchase of 2,333 acres for addition to three national wildlife refuges. The additions include 796 acres to Bombay Hook National Wildlife Refuge (NWF) in Kent County, DE; 36 acres at the Back Bay NWF in Virginia Beach, VA; and 1,501 acres at the Roanoke River NWR in Bertie County, NC. Funds for these acquisitions come from the sale of Migratory Bird Hunting and Conservation Stamps, popularly called Duck Stamps, that must be purchased by all waterfowl hunters 16 years and older, together with funds from other wildlife-related accounts.

The Cabinet-level Commission also approved \$5,329,913.00 in grants for 14 wetland conservation projects in Canada and Mexico. The grants are being provided under the North American Wetlands Conservation Act, which stipulates that at least 50 percent of available funding should be spent in Canada and Mexico because of the importance of the breeding and wintering habitat for migratory birds in those two countries. In Mexico the grants will fund wetlands conservation projects in the States of Yucatan and Sonora which will reestablish and protect wintering grounds for waterfowl including flamingos.

In Canada, eight projects in the eastern provinces will protect and improve a stable habitat for black ducks and a large variety of other waterfowl, shorebirds, raptors, songbirds, and fish nursery areas. Four projects in the prairie pothole region, the most productive waterfowl area in Canada, will increase the diversity, stability, and productivity of the entire wetland ecosystem for all breeding waterfowl and other wetland-dependent wildlife.

> excerpted from *Department of the Interior News Release, 26 July 1993*

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### **Grassland Bird Populations Show Steep Decline**

Native birds in North America's grasslands have suffered steeper, more consistent, and more widespread declines over the past 25 years than any other U.S. bird group, according to research by the Interior Department's USFWS.

According to data from the Service's annual Breeding Bird Survey, seven of the 12 bird species considered endemic to the Great Plains grasslands declined during the past 26 years, with declines of four (mountain plover, Franklin's quail, Cassin's sparrow, and lark bunting) being statistically significant. The mountain plover has been identified as a candidate for listing under the Endangered Species Act.

In addition, 16 of 25 more widespread species that are considered "secondarily" evolved to grasslands also declined, with six showing significant declines (eastern meadowlark, and grasshopper, Henslow's, lark, Brewer's, and clay-colored sparrows) considered statistically significant. Across all grassland species, only upland sandpiper and McCowan's longspur have increased significantly since 1966.

The grassland birds spend the summer in North America. Many remain in the U.S., wintering in grasslands of Oklahoma, Texas, Arizona, and California's Central Valley, Others--like many forest birds--are considered "neotropical migrants" because their winter ranges extend into Mexico, and Central and South America. The reasons for the population declines among grassland birds are not fully understood, but are believed to be caused by changes in the grasslands ecosystems of the Great Plains over the past 100 years.

## Legislative Outlook. *Continued*

The Great Plains extend from south central Saskatchewan to central Texas and include shortgrass prairie in the west and tallgrass prairie in the east.

The Great Plains Initiative, a program spearheaded by the Western Governors Association and involving State, Federal, and Provincial governments of the U.S. and Canada, is formulating plans to conserve the Great Plains ecosystem and thus the endemic grasslands bird species.

> excerpted from *USDI News Release, 24 June 1993*



## **Australian Zoo Community Mourns Death of Zoologist Dr. David Fleay**

One of Australia's leading environmentalists and zoologists, Dr. David Fleay, died 7 August of pneumonia at the fauna and flora reserve he started more than 40 years ago. Dr. Fleay was perhaps best known as the first person to successfully breed the Duck-billed platypus in captivity. This remarkable event took place in the mid 1940's at Healesville Sanctuary. He was also the first to breed Wedgetail eagles (*Aquila audax*) and the Powerful owl (regional name-no scientific name found) in captivity. He spent his life creating a sanctuary in Queensland for the research and protection of Australia's wildlife. Begun with one platypus, an eagle, six owls and a snake, Fleay's Fauna Centre became one of the most important research sanctuaries in Australia.

Dr. Fleay led the way in the research of antivenenes including one for the deadly Taipan (*Oxyuranus scutellatus*) and he also created Queensland's largest aviary. In 1983, Dr. Fleay transferred responsibility for the sanctuary at West Burleigh to the Queensland government to ensure its preservation. Known as the "Father of Conservation", Dr. Fleay's Nature Notes appeared as a weekly column in the Courier Mail for 36 years and he was a founding member of the Wildlife Preservation Society of Queensland.

>Excerpted from the *Australian Associated Press wire service, 8 August 1993*



## **Information Please**

The Central Park Wildlife Center is looking to identify environmental and behavioral stimuli for North American river otters (*Lutra canadensis*). This is a survey on the diet, husbandry, and management of N.A. river otters being kept in captivity within Canadian and United States zoos. If you have not received a survey and are interested in participating in the survey or have any information relating to the natural history, breeding, husbandry, enrichment, and/or management of this species please send to: Jackson T. Zee, Wild Animal Keeper, Central Park Wildlife Center, 830 Fifth Ave., New York, NY 10021 (212) 439-6579 or 439-6546. Participating institutions will receive a copy of the results upon completion. Thank you.

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The Sacramento Zoo is currently re-evaluating our Ratite diets. We exhibit 1.1. Emu with 2.4 Wallaro and 1.1 Ostrich with 0.2 Eland and 1.2 Grevy zebra. We are using Spectrum® Ratite Diet and supplementing with oyster shell. Egg production was low this year from our 8-year-old Ostrich and 10-year-old Emu hens. Any dietary or husbandry information would be greatly appreciated. Send information to: Lee Houts, Sacramento Zoo, 3930 West Land Park Drive, Sacramento, CA 95822.

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Any information on hand-rearing the Fishing Cat (*Felis viverrinus*) would be appreciated. Please send information to: Jeanne Maynard, Exotic Feline Breeding Compound, Inc., HCR 1, Box 84, Rosamond, CA 93560.



## ***FEATURED SESSIONS AND WORKSHOPS***

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Some of the paper sessions being formed focus on:

- Conservation Action in the 90's
- Animal Husbandry Case Studies
- Environment & Behavior - Exhibits in the 90's
- Animal Management Techniques
- AAZK Members in the Field

Featured workshops will address:

- Bowling for Rhinos
- Bog Turtle Research and Conservation
- Exotic Animal Dentistry
- The Global Orangutan Conservation Program
- Veterinary Emergency and Critical Care Medicine
- AAZK Chapter Fundraising
- The Endangered Species Act and Other Important Legislative Action
- Animal Enrichment

We're pleased to confirm that full conference registration will include:

- 2 breakfasts
- 2 lunches
- 2 dinners

### ***REMINDERS:***

- *Exhibit Booths:* Please let us know as soon as possible if you need an Exhibitor's Booth. Space is limited! Call the AAZK Conference Hotline at (404) 624-5939.
- *Alternate Lodging:* We can provide some assistance for those in need of alternate lodging. Call the AAZK Conference Hotline at (404) 624-5939 for suggestions.





1993 National AAZK Conference

October 10-14

Hosted By: Zoo Atlanta AAZK Chapter  
800 Cherokee Avenue  
Atlanta, GA 30315

Conference Registration Form:  
(Please one per registrant)

Name: \_\_\_\_\_

Street Address: \_\_\_\_\_

City, State/Province: \_\_\_\_\_ Zip \_\_\_\_\_

Zoo Affiliation: \_\_\_\_\_

Name & Title for Badge: \_\_\_\_\_

Primary field of interest: \_\_\_\_\_

|                                   | Yes   | No    |  |
|-----------------------------------|-------|-------|--|
| AAZK member .....                 | _____ | _____ |  |
| Committee Member .....            | _____ | _____ |  |
| Submitting a paper .....          | _____ | _____ |  |
| Vegetarian .....                  | _____ | _____ | Type: _____  |
| Participating in Zoolympics ..... | _____ | _____ |  |
| Bringing an auction item .....    | _____ | _____ |  |
| Interested in a T-shirt .....     | _____ | _____ | Size: <u>  </u> S <u>  </u> M <u>  </u> L <u>  </u> XL |

Please check boxes of fees you will be paying and events you plan to attend:

|                            |  |
|----------------------------|--|
| Full Conference rates      | Daily Conference Rates                     |
| Member \$95 _____          | Monday - \$25 _____ Wednesday - \$25 _____ |
| Member spouse - \$95 _____ | Tuesday - \$30 _____ Thursday - \$25 _____ |
| Non-Member - \$110 _____   | Icebreaker-\$10 _____ Banquet - \$35 _____ |
| Late Fee* - \$10           | Late Fee* - \$3                            |

\*Late Fees charged after 9/1/93 Total Amount Due \_\_\_\_\_

Daily registrants MUST register 48 hours prior to day or event.  
Full Conference rates include all activities, meals and transportation.  
Daily registrants must register for the Icebreaker and Banquet separately.

Conference Trips: Please check the trip you are interested in joining.

- A one day trip to Chattanooga Aquarium on Saturday, October 9.
- A weekend trip to Cumberland Island and White Oak Plantation, Friday through Monday, October 15-18.

PLEASE MAKE PAYMENTS TO: ZOO ATLANTA AAZK CHAPTER

Indicate form of payment:  Check  Visa  Mastercard  Discover  AMEX

Card Number: \_\_\_\_\_ Expiration Date: \_\_\_\_\_

Signature: \_\_\_\_\_

## TRANSPORTATION FROM THE AIRPORT TO HOTEL

### RENTAL CAR

Alamo Rent A Car has been appointed the official car rental company for the 1993 AAZK National Conference. Special discount rates have been extended to any members attending this event. These rates are available one week before and after the meeting dates and include UNLIMITED FREE MILEAGE. To make reservations call Alamo at 1-800-732-3232 and request Group I.D. # 73474 and Rate Code "GR".

### PUBLIC RAIL: Take MARTA "it'sMARTA"

Atlanta's rapid rail system, MARTA, provides easy access from the airport to the Sheraton Colony Square Hotel:

- The "MARTA" Rail Station is located inside Hartsfield International Airport at the west end of the baggage claim area. There are signs directing you to the station.
- The cost of the trip is \$1.25. Token machines are located in the station.
- Exit the train at the Arts Center Station (Station North 5; "N5"). There are maps in each rail car. You do not have to change trains. The ride takes approximately 20 minutes.
- The Sheraton Colony Square Hotel is located one block east and one block south of the Arts Center Station. The station is located at the corner of 15th and West Peachtree Street and the Sheraton Colony Square Hotel is located at 14th and Peachtree Street.

Please let us know your arrival time in Atlanta by completing and returning the form below. A shuttle van will transport you from the Arts Center Station to the Sheraton Colony Square Hotel.

### AIRPORT SHUTTLE

"The Airport Shuttle" costs \$8.00. Follow the ground transportation signs in the baggage claim area to get to the shuttle located just outside the terminal.

Zoo Atlanta - Boulevard Exit #26 from I-20

Sheraton Colony Square Hotel -  
10th/14th Street Exit from I-75/85

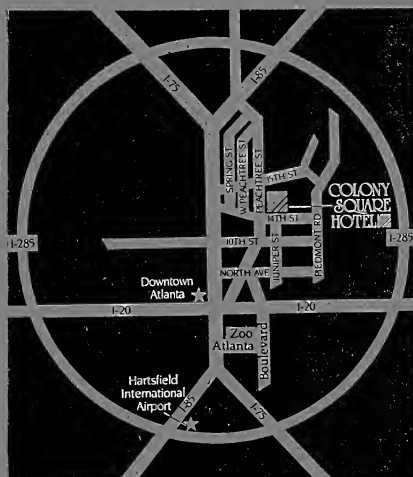
I will be taking the rapid transit system (MARTA) to the Arts Center Station and the AAZK shuttle van to the hotel.

Name \_\_\_\_\_

Date of Arrival \_\_\_\_\_

Time of Arrival \_\_\_\_\_

PLEASE RETURN TO: Zoo Atlanta AAZK Chapter,  
800 Cherokee Avenue, SE, Atlanta, GA 30315 or  
leave recorded information on the conference  
hotline at (404) 624-5939.



## *1993 AAZK CONFERENCE HIGHLIGHTS*

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### *Saturday, October 9*

Pre-conference trip to Tennessee Aquarium, Chattanooga.

### *Sunday, October 10*

Conference Icebreaker

### *Monday, October 11*

Everything begins with a welcome breakfast and roundtable discussions. After a day of paper sessions, participants can brachiate to *Underground Atlanta's* many restaurants, night clubs, and shops.

### *Tuesday, October 12*

Tuesday is Zoo Day in Atlanta. Conference participants will be free to explore public and behind the scenes areas as well as having an opportunity to attend various workshops by Zoo Atlanta staff. Zoo Atlanta highlights include the Ford African Rain Forest, home to four gorilla troupes, drills, guenons, and west African forest birds; the Masai Mara east African exhibits; and an extensive reptile collection. Since redevelopment began in 1985, Zoo Atlanta has received numerous design awards including two AAZPA significant achievement awards.

### *Wednesday, October 13*

We'll escape to the Fernbank Museum of Natural History for a look at the natural history of the southeastern United States as well as an IMAX film on mountain gorillas. After lunch at the museum, we'll travel to Stone Mountain Park, Georgia's most visited attraction, for an afternoon of hiking, wildlife trails, a mountain stone carving, as well as the ever popular Zoolympics and AAZK awards cookout.

### *Thursday, October 14*

After a day of papers and workshops, we'll relax with the conference banquet, live auction, and dancing in the Grand Ballroom of Colony Square. Our keynote speaker will be Lee Durrell of the Jersey Wildlife Preservation Trust who is world famous for her research and writing on numerous conservation topics. She is especially well known for her work with mammals and birds of the Malagasy Republic, both in the wild and captivity.

### *Friday, October 15*

Post-conference trip to Cumberland Island, White Oak Plantation, and the Okefenokee Swamp.



# Elephant Set

(Editor's Note: Beginning with the March issue, this column has contained material on elephant morphology and physiology; nutrition; external diseases including parasites; internal diseases including systemic, gastrointestinal and respiratory; and use of anesthesia. These articles were part of an extensive research manuscript written by Ursula Bechert, DVM of Corvallis, OR.)



## Internal Diseases Part III

By Dr. Ursula Bechert, DVM  
Corvallis, OR

### Musculoskeletal Problems

Fractures or dislocations carry a poor prognosis in the elephant. Circus elephants are subject to various lameness not normally observed in the wild. Degenerative joint disease (DJD) is more common in captive than wild elephants and there are several possible causes including faulty conformation, infectious agents (especially *Mycoplasma*), trauma or damp, cold, hard surfaces such as concrete which can predispose to DJD as can chaining by restricting movement (Schmidt, 1986).

Treatment for DJD includes warm-water hosing of the joint(s), rubefacient liniments to promote circulation, aspirin given at a dosage of 100-200 grins per 500 kg body weight 2-3 times per day, non-steroidal anti-inflammatories and/or tylosin (12 mg/kg once a day for five days) for *Mycoplasma* infections and possible changes in management.

### Urogenital Diseases

Diseases affecting the urogenital system of the elephant include cystitis, postpartum metritis, urogenital polyps, nephritis, neoplasia of the reproductive tract and accessory glands, cystic ovaries, dependent edema of external genitalia, retained placenta and balanoposthitis (Schmidt, 1986).

Cystitis was diagnosed in 39% of 18 elephants necropsied in the wild (Basson, et al. 1971). Bacterial and mycotic infections are the most likely causes of inflammation of the urogenital canal (Schmidt, 1986). Signs include painful urination, urine retention, erythema of mucous membranes, exudate drainage, and swelling of the canal and associated tissues. Diagnosis is made by culture and endoscopic examination. Treatment is based on culture and sensitivity results.

Postpartum metritis often progresses into fatal septicemia. Diagnosis is based on observation of the cow for clinical signs and evaluation of white blood cell counts. Treatment involves administration of estrogen to keep the cervix open followed by 30 mg ergonovine to empty the uterus (Schmidt, 1986). Supportive care includes intravenous fluids and high levels of parenteral antibiotics based on culture and sensitivity results.

Antibiotics should be continued for 10-14 days or until all clinical signs of metritis are gone.

Polyps were found in the urogenital canal of an African elephant and continued to grow, ulcerate and bleed (Munson, et al. 1986). The cause has not been determined. Treatment is by surgical removal.

## Elephant Set: Internal Diseases - Part III. *Continued*

### Cardiovascular Diseases

Diseases of the circulatory system include medial sclerosis, atherome, sudden death syndrome, lymphangitis, parasitism, varicose veins, anemia, heart failure, aneurysm and stroke (Schmidt, 1986). Most of these problems are diagnosed at necropsy.

Medial sclerosis is an abnormal deposition of calcium salts within large arteries resulting in partial or complete occlusion of these arteries to the ears, trunk, legs, heart and brain (Schmidt, 1986). Failure of the organ supplied results.

Atheroma is an abnormal deposition of lipid in large arteries, similarly resulting in occlusion and decreased circulation to the organ supplied (Schmidt, 1986).

Causes of sudden death include great fear (often thunderstorms), transport away from a familiar environment or loss of a mate. These events are probably related to a great discharge of the sympathetic nervous system which could lead to ventricular fibrillation (Schmidt, 1986).

Numerous protozoa (*Trypanosoma*, *Babesia*, *Piroplasma*) have been reported in elephants but, the primary one of concern is *Trypanosoma* in Asian elephants (Schmidt, 1986). Signs of infection include fever, depression, loss of condition, icterus, hemoglobinuria and anemia. Transmission occurs through biting arthropods. Diagnosis is based on blood smears taken during the febrile stage of disease. Treatment is by administration of naganol.

### Next Month: Use of Anesthesia in the Elephant

#### Literature Cited in This Article:

- Basson, P., R. McCully, V. DeVos, E. Young, and S. Kruger. 1971. Some parasitic and other natural diseases of the African elephant in Kruger National Park. *Onderstepoort Journal of Veterinary Research* 38(4):239-254.
- Munson, L., W. Heuschele, M. O'Banion, J. Sundberg, and J. Oosterhuis. 1986. Polyps in the urogenital canal of an African elephant. *Journal of the American Veterinary Medical Association* 189(9):1190-1191.
- Schmidt, M. 1986. Elephants. pp. 883-923 in M. Fowler (ed.) *Zoo and Wild Animal Medicine*. Saunders: Philadelphia, PA.



## AAZK Announces New Professional/Contributing Members

- |  |  |
|--|--|
| Jennifer Hovis, Catoctin Mt. Zoo Prk. (MD) | John K. Thompson, Catoctin Mt. Zoo Prk. (MD)   |
| Willie Campbell, North Carolina Zoo (NC)   | David B. Cozart, Sea World of Florida (FL)     |
| Boyce Randy Gire, Busch Gardens (FL)       | Tracy Forney, Knoxville Zoo (TN)               |
| David B. Hamilton, Knoxville Zoo (TN)      | Maria Manuguerra-Crews, Detroit Zoo (MI)       |
| Tim Sampson, John Ball Zoo (MI)            | Doreen Edwards-Harvey, Roosevelt Prk. Zoo (ND) |
| Jennifer Wangerin, Lincoln Park Zoo (IL)   | Susan Leesman, Grindstone Valley Zoo (IL)      |
| Heather Parker, Audubon Zoo (LA)           | Vernon R. Veer, Jr., Denver Zoo (CO)           |
| Peter B. Flippingier, Denver Zoo (CO)      | Barbara Moore, Chula Vista Nature Center (CA)  |
| Kim Caldwell, Sea World (CA)               | Joseph Kuhn, San Diego Zoo (CA)                |
| Sherri Nordin, Calgary Zoo (Alberta)       |  |

### New Contributing Members

- PRS Knobbs, Project Manager, Electromark, Wolcott, NY  
Kenneth A. Roemer, Student, Santa Fe Community College Teaching Zoo, Gainesville, FL  
Philip E. Foster, Jackson Zoological Park, Jackson, MS



# Chapter News

## National Zoological Park AAZK

NZP Associate Pathologist, Dr. Don Nichols, gave an informative and useful slide presentation entitled "Viral, Bacterial, Fungal and Parasitic Diseases of Zoo Animals" at our April Chapter Meeting. Don began his talk by explaining the differences between infectious, contagious and zoonotic diseases. He then discussed the properties typical of the four disease groups stated in the talk's title.

His slides illustrated examples of disease recognition in mammals, birds, reptiles and amphibians which was followed by discussion of the appropriate veterinary treatment for each. The talk was very well presented and enthusiastically received.

May was Preakness Clean-up month. Although Eric Krussman was getting nervous about having enough volunteers this year, the 1993 Clean-up netted \$8,600.00 - the best year ever. The money was again turned over to The Nature Conservancy to purchase additional land for permanent protection in Costa Rica. This successful, one-day event is hard work but it is for a commendable cause and we applaud the volunteers who participated.

Lee Miller showed slides of the Toledo Zoo, Cleveland Zoo and the Fort Wayne Children's Zoo at our May Chapter Meeting.

The speaker for our June Chapter meeting was Bruce Weissgold of World Wildlife Fund-TRAFFIC. His presentation documented the world-wide exploitation of wildlife and wildlife products. Declared wildlife trade has risen from \$6 million (1985) to \$1.2 billion (1990) which says nothing of the undeclared trade figures. The United States, western Europe and Japan are recognized as the worst offenders of illegal wildlife trade.

Our July meeting featured each officer presenting an update on an NZP-AAZK project. --Kathy Kelly, Chapter Liaison

## Portland Chapter AAZK (Portland, OR)

Officers for the Chapter are:

President.....Bret Sellers  
Vice Pres.....Melissa Barringer  
Secretary.....Jan McCoy  
Treasurer.....David Illig  
Chapter Liaison.....Michael Illig

It has been a busy year already for the Portland Chapter. Our "Bowling for Rhinos" event was held on two days this year, 3 & 4 April, due to an overwhelming response by interested bowlers. We had over 150 bowlers and raised \$12,230.21.

Our top bowler, Linda Waltmire, a zoo volunteer and local Chapter member, raised \$3,754.00. Linda also arranged corporate sponsorship with IAMS pet food company and local PetCo pet stores. Fifty cents was donated by IAMS for every proof of purchase seal turned in by customers that bought a bag of IAMS pet food. The seals were collected by PetCo stores.

We have met with an IAMS representative to gear up for next year's event. We are hopeful that the same promotion will include all pet store outlets that handle IAMS foods. This will increase the exposure from around 50 stores participating in the promotion to over 700 all around the Northwest.



AAZK member Jan Hixson provided the inspiration and her artistic talents and produced our new Chapter logo seen here. The logo represent's the Chapter's commitment to the rehabilitation of Northwest owls and our zoo's commitment to the reproductive research of Asian elephants. Also, the Chapter's main source of income is generated by the sale of canned elephant manure as "ZooDoo"®.

## Chapter News, Continued

Portland Chapter supports an organization called Bird of Prey Rescue Northwest, Inc., which is being developed and headed by local member and Metro Washington Park Zoo keeper Stanley Held. Stanley is currently negotiating for a site in the local area for the rehabilitation center and hopes to be up and running soon. The Chapter has donated a total of \$2,970.00 to help in the start-up costs. The center will be dedicated to the rehabilitation of Northwest birds of prey. We applaud Stanley for his initiative and hard work in the preservation of local wildlife.

The Portland Chapter gets involved in many of our zoo's special events. We have a booth at the annual "Pet Day" here at the zoo where the Chapter provides information to the general public on the dangers of acquiring exotic animals as pets. This has been the ongoing project of local member Jan Hixson. She has spent countless hours developing written information on the dangers and laws concerning private ownership of exotic animals. Jan is our zoo's animal registrar and handles the innumerable calls that come into the zoo from people inquiring about exotics as pets. No doubt she has single-handedly saved many animals from lives of inadequate care and suffering.

We are also involved in the zoo's annual "POW WOW" (Preserve Our World) Day. Our booth allows visitors to can their own "ZooDoo"®. We explain how the sale of "ZooDoo"® helps promote conservation and education projects of our Chapter. The slogan of the day is "Endangered Feces Helps Endangered Species".

Our annual AAZK picnic was held on 17 August. It is always a very popular event and brings many zoo employees together from all departments.

The First Conference on Environmental Enrichment was held here in Portland and was headed by members Dr. Jill Mellen and Dr. David Shepherdson. Our Chapter had a booth at the conference hotel promoting AAZK. We also provided the funding for the conference T-shirts and for refreshments at the closing dinner.

We are looking forward to another year of growth and involvement in many worthwhile projects.

--Michael Illig, Chapter Liaison

## CHAPTER PRODUCT NOTE

Please make a note that there is a new contact person for purchase of the AAZK Logo Bumper Stickers. Jennifer Gerez is the contact person for this product which is offered by the Jacksonville AAZK Chapter, 8605 Zoo Road, Jacksonville, FL 32218.

## Dallas Zoo AAZK Chapter

The past several months have been very busy for our Chapter. In March a guest speaker, Lonnie McCaskill, presented a program on fossils and arrowheads. He gave us tips on where to collect locally and what to look for.

In May, Chapter members volunteered for a day at Clymer Meadow. This is one of the last tall grass prairies in Texas and is owned by The Nature Conservancy. We battled chiggers and poison ivy while taking down wire fencing to ease in the management of the prairie.

On 4 May, our Chapter provided refreshments and hors d'oeuvres for the Zoo's first Wildlife Conservation and Research Seminar featuring Dave Schleser, Aquatic Biologist of the Dallas Aquarium, who spoke about desert fish and Greg Dimijian, Wildlife Photographer and university lecturer, who spoke on how animal behavior changes with the environment.

For our last activity in May, we made a trip to the Fort Worth Museum of Science to see the IMAX films "Tropical Rainforest" and "The Fires of Kuwait". The cinematography of both was great!

On Conservation Day in June and Zoobilee in July, we manned an AAZK Information Booth at the zoo. Just in time for Zoobilee we received our Ecosystem Survival Plan Conservation Parking Meter. This was generously donated by Kurt Clemeson of Earth Foundation.

## Chapter News, Continued

Our Third Annual "Bowling for Rhinos" took place on 25 June at Don Carter's All Star Lanes. There were sixteen bowlers who were able to collect over \$1700.00. The Highest Score prize, a new Rhino Bowling Ball®, was won by Mark Wanner and the Most Pledges prize, a rhino shirt, was won by Michelle Whitehouse. A raffle was also held for another Rhino Bowling Ball®--this was won by the bartender. Special thanks to Bowling and Billard Supplies for donating the two bowling balls and to Whole Foods Market for placing a donation box and information in their store.



New Chapter patches are in! These are available for \$3.50 each with a business-sized, self-addressed stamped envelope. Please send to: AAZK Dallas Zoo Chapter, 621 E. Clarendon Dr., Dallas, TX 75203. --Kevin Lew, Chapter Liaison



## Rwandan Civil War Ends Peace Treaty Signed



On 4 August, 1993, the Rwandan government signed a peace treaty with the Rwandan Patriotic Front ending almost three years of political turmoil and actual warfare. Sixteen points were agreed upon, many of which involve the division of responsibilities in the new army, the establishment of a transition government and the establishment of a broad-based political system.

With the cessation of hostilities, displaced Rwandan farmers will be able to return to their fields in time to plant another crop before the rainy season begins. Feeding and sheltering these almost one million displaced people has been a major task and the countryside where they have been camped is denuded of trees and bushes.

Poaching pressures on the rain forest have been extreme during this disruptive period. Two silverback mountain gorillas have died and at least two gorillas were caught in snares but survived. We have no knowledge of gorilla groups in Zaire, but believe most groups are intact. We feel extremely fortunate to have gorilla families survive this disturbance and believe Rwandans appreciate the value of these rare animals to their country, no matter who has governmental power.

We congratulate the Rwandans for concluding this peace agreement and hope the country can settle quickly to going about the business of everyday life. Dieter Steklis, Director of Karisoke Research Center, is now in Rwanda repairing and restocking the camp for the return of our researchers in the very near future.

>News Release from The Dian Fossey Gorilla Fund 11 August 1993



# An Inexpensive Simulated Thundershower for Small Enclosures

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By

*Chuck Smith*

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West Columbia, SC 29169*

The design, development, and construction of natural habitat displays in zoological parks has become the rule, rather than the exception over the past several decades. Much emphasis is often placed on recreating fine details in simulating the habitats of the animals displayed. One interesting addition to tropical displays, however, that is often overlooked because of the prohibitive cost, is the installation of simulated thunderstorms. Professionally designed and installed systems can often cost several thousand dollars or more. However, there is little argument that the addition of a thunderstorm, complete with lightning and thunder, adds a dynamic dimension to tropical displays, as well as providing benefits to the animals housed therein, particularly in the case of some species of amphibians and reptiles.

The system described below was originally designed for a small display housing tropical lizards, however, it can easily be modified for use with much larger enclosures. The primary consideration when designing this system was cost—the total expenditure for materials was under \$150.

The enclosure itself was commercially fabricated out of fiberglass and measures approximately 4'x4'x4'. A large section of the top is covered by stainless steel screening, providing ventilation and a place to situate heat lamps and fluorescent fixtures. Servicing is accomplished through a large rear door and a covered drain is located in the floor toward the rear.

A master timer controls all of the functions of the simulated rain shower system, turning them off and on simultaneously at preset intervals. Connected to this timer is a seven outlet plug strip, into which the actual components of the system are plugged. A second timer, synchronized with the first, controls the normal enclosure lighting, turning these lights off just prior to the beginning of the rain shower.

Two three foot lengths of 1/2" diameter PVC pipe were used as the sprinkler. Small holes were drilled randomly along one side of each of these pipes at a density of approximately 10 holes per square inch. The ends of the pipes were then sealed with PVC caps using plastic pipe cement

and at the center of each pipe was installed a PVC "T" fitting which was connected to a 1/2 inch central supply line. A solenoid control valve, salvaged from a washing machine, was fit in this supply line, its electrical input connected to the plug strip and in turn, to the master timer. The entire "H" shaped sprinkler was mounted above the screen top of the enclosure. (Please note: in the accompanying diagram the sprinkler is shown in the enclosure to simplify the illustration.)

A four foot fluorescent fixture, containing two 40 watt GE black lights (BL40), provides background light between "lightning flashes."

To provide the desired sound effects, a small portable cassette tape player was used. The output of this recorder was run to a small speaker mounted on a wooden shelf above the enclosure. Some experimentation was necessary to determine the best location for this speaker. Eventually, this original speaker was replaced by an amplified speaker located in the ceiling above the public viewing area, resulting in a significant improvement in sound quality, amplitude, and clarity.

A cassette tape recording of a thunderstorm was purchased (these are available at most music and electronics stores) and a continuous cassette tape loop was made from this original recording. This tape loop was used in the tape player for the actual sound effects, eliminating the need to turn the tape over once a side is completed. This can also be avoided by utilizing an auto-reverse tape player.

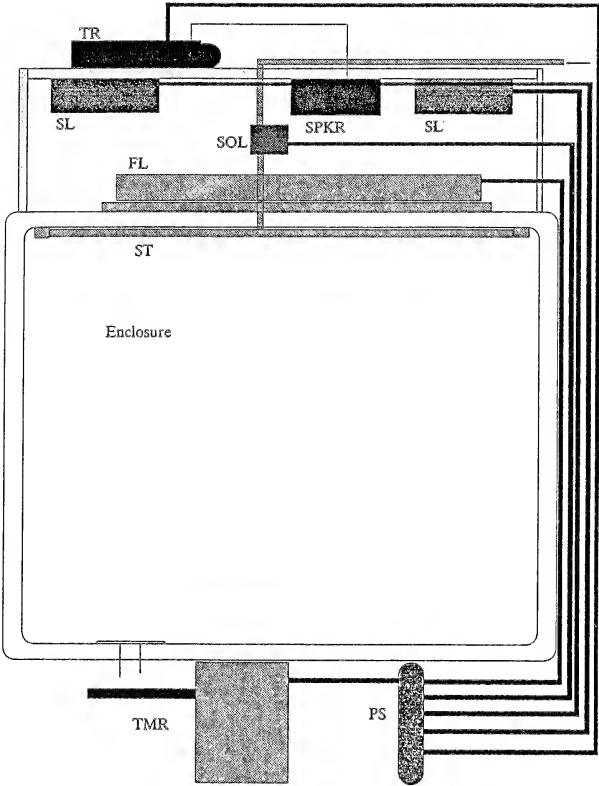
As with the other components, the electric input of the tape player was connected to the plug strip controlled by the timer.

In the original configuration of this system, the lightning flashes were achieved by wiring a pair of photographic flashes into the timer. However, it proved quite difficult to keep these flash units operating properly. Instead, a pair of strobes, purchased from an electronics supply store, were installed above the enclosure, mounted downwards on the wooden shelf. These particular strobes were supplied with an adjustment to regulate the number of flashes per minute. By adjusting the units at slightly different intervals, it was possible to achieve the effect of the initial flash being followed by an "after-flash" which is often seen in nature.

Many variations are possible with this simple system, and are only limited by the imagination and resources of the designer. For instance, the use of an ultrasonic humidifier also connected to the timer via the plug strip, was tried at one point with very interesting and pleasing results.

In addition, if water conservation is a consideration, a pump/filter combination can be utilized instead of the continuous flow format.

An Inexpensive Simulated Thundershower for Small Enclosures, Cont'd



*Caption for illustration. FL: Fluorescent light fixture; PS: Plug strip; SL: Strobe light; SOL: Solenoid; SPKR: Speaker; ST: Sprinkler tube; TMR: Master timer; TR: Tape recorder.*



# Occurrence of *Diectophyme renale* in Maned Wolves (*Chrysocyon brachyurus*) in the Area of Uberlandia, Brazil

By

Eduardo Bevilaqua<sup>1</sup>, Maria Ines Machado<sup>1</sup>, Maria Jose Santos Mundim<sup>1</sup>  
Antonio Vincente Mundim<sup>2</sup>, and Adalmyr Morais Borges<sup>3</sup>

## ABSTRACT

The present work documents the occurrence of the nematode *Diectophyme renale* in Maned wolves (*Chrysocyon brachyurus*) in the area of Uberlandia, Minas Gerais. Four animals were studied using laboratory experimentation and necropsy. Of these, three were maintained in captivity and one came from its natural habitat, but all were wild born. Two wolves were parasitized by adult nematodes in the right kidney. One of these animals had six (6) *D. renale* females, varying in length from 25 to 53cm. In the other, one male *D. renale* was found, 14.8cm in length. Two wolves had no adult parasites; however, they did have characteristic fibrous capsules on the right kidney with nodular aspects, indicating a lesion caused by *D. renale*. In all the animals studied, the left kidney presented compensatory hypertrophy. The authors point out the importance of new investigations which could contribute to the elucidation of the biological cycle of the parasite and evaluate the zoonotic potential of diectophymiasis in the region studied.

**Key Words:** *Diectophyme renale*, Diectophymiasis, *Chrysocyon brachyurus*, maned wolf, parasitism.

## INTRODUCTION

The Maned wolf (Fig. 1) is the only representative of the genus *Chrysocyon* and is a rare South American canid inhabiting grassland, open forest and swampy areas of central and southeastern Brazil, northeastern Argentina and eastern Paraguay and Bolivia. This canid is solitary and secretive and looks like a long-legged fox (Bush, 1980).

*Diectophyme renale* is a nematode, the only known representative of the genus. The adults are parasites of the kidneys, abdominal cavity and other organs of the dog, wolf and various other carnivores (Freitas, 1976). *D. renale* is red in color. Males measure from 140-200mm/4-6mm, and females can reach up to 1000/12mm (Freitas, 1976). The female is narrow at both extremities, and the posterior extremity of the male is characterized by the presence of a prominent copulatory bag, armed with a spicule (Matera, et al, 1968).

*D. renale* is a cosmopolitan parasite, very common in North America. In South America it has been recorded in Paraguay, Brazil, Uruguay and Argentina (Coppo and Brem, 1981). In Brazil, diectophymiasis was described for the first time in the Maned wolf in 1860 by Molin. It has been found frequently in dogs in the State of Sao Paulo (Rocha et al, 1965), Rio de Janeiro (Dacorso Filho et al, 1954), Santa Catarina (Neves and Morais, 1983) and Minas Gerais (Costa and Lima, 1988).

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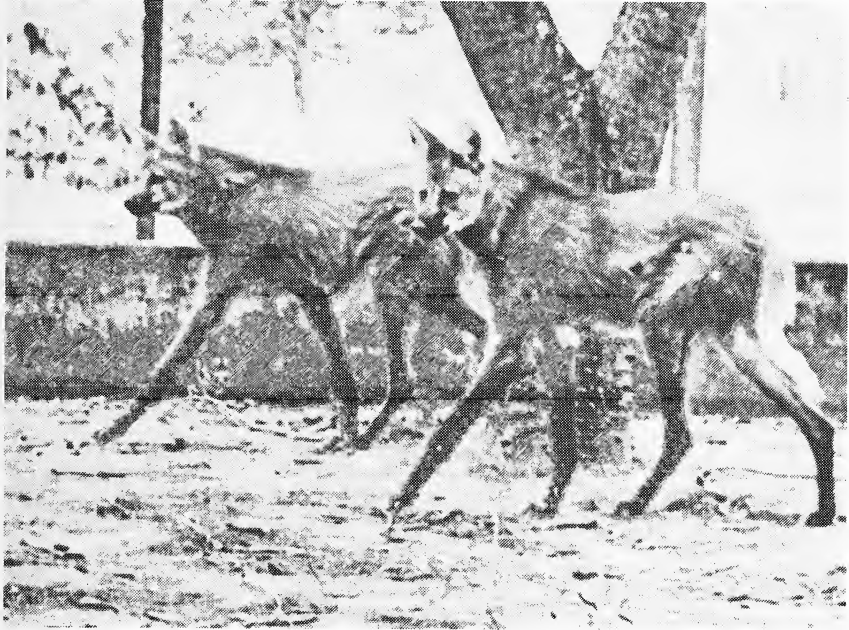
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## Occurrence of *Diocotophyme renale* in Maned Wolves, Continued

The dog is the domestic animal most frequently found infected. Occurrence in felines, equines, porcines and ruminants is far rarer (Neves and Morais, 1983). Among the diverse wild species studied, diocotophymiasis has been diagnosed mainly in the Maned wolf and also in Coast (*Nasua nasua*), Grison (*Galictis vittata*), Fox (*Lycalopex vetulus*) and Sloth (*Choloepus didactylus*) (Rocha et al, 1965; Matera et al, 1968; Bush, 1980; Coppo and Brem, 1981; Neves and Morais, 1983).



**FIGURE 1 - Pair of Manes Wolves (*C. brachyurus*) at the Uberlandia Zoo in Uberlandia, Brazil.**

This parasite has a high zoonotic potential in populations that feed on fish (Coppo and Brem, 1981). Up to 1972, 15 human cases of diocotophymiasis had been cited. The predominant localization of the adult parasit is renal, with a great prevalence in the right kidney (Matera et al, 1968; Bush, 1980; Coppo and Brem, 1981), and of infection with a single parasite. There are records, however, of findings in other organs or cavities such as the liver and the abdominal cavity. The reason for the predominance of findings in the right kidney is not clear, but it is hypothesized that this is due to the proximity of this organ to the liver from where the larvae could migrate. The eggs of *D. renale*, eliminated in the urine of the definitive host, continue to be viable in the environment for 24 months (Freitas, 1976). When eaten by annelids, especially by the genus *Lambanicola*, of worldwide distribution, they develop to a first stage larva. The annelids are considered the first intermediary host of the biological cycle of the *D. renale*. Crustaceans, mollusks, fish, amphibians and mammals are considered to be either secondary intermediate hosts or essentially paratenic hosts (Karmanova, 1959), while the paratenic host seems to have an important ecological function resulting from its role in the canid's food chain.

### **MATERIAL AND METHODS**

**Animals:** Four Maned wolves were studied during the period from April to July 1989. All specimens were originally from the wild while two, a male and female, had been maintained in captivity at the Uberlandia Zoo. Only one of these animals was alive, received after being hit by a car on the outskirts of the city.

## Occurrence of *Diocotophyme renale* in Maned Wolves. *Continued*

Urine exam: Two samples from two of the wolves were submitted to centrifuge sedimentation to discover the presence of eggs.

Necropsy: The necropsies were performed at the Faculty of Veterinary Medicine of the Federal University of Uberlandia and in the Regional Center for the Control of Zoonosis in Uberlandia. The gastro-intestinal tract, cardio-respiratory system, liver, kidneys and abdominal cavities were examined.

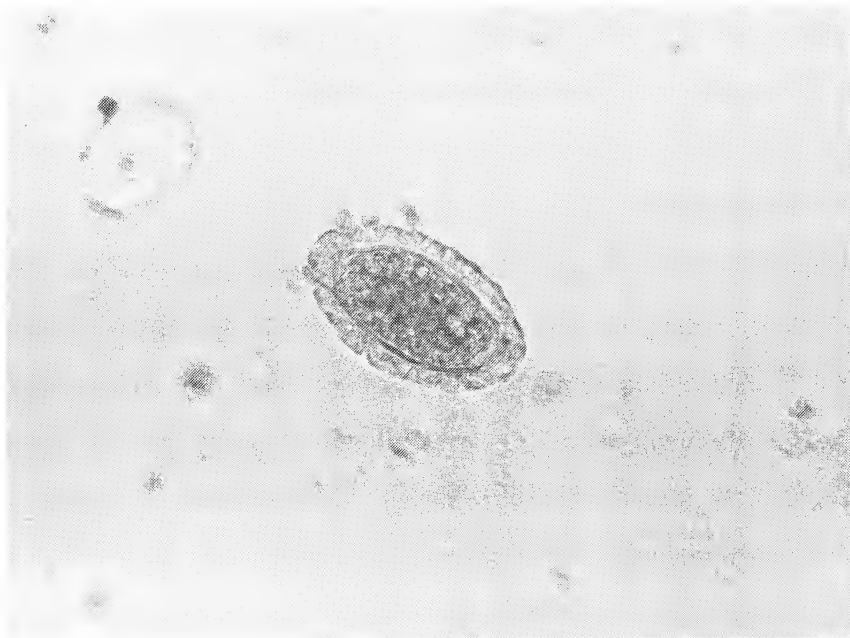
### COLLECTION AND IDENTIFICATION OF THE PARASITE

The adult parasites found were extracted and placed in saline. After identification and measuring, they were photographed and fixed in hot 10% formol.

### RESULTS

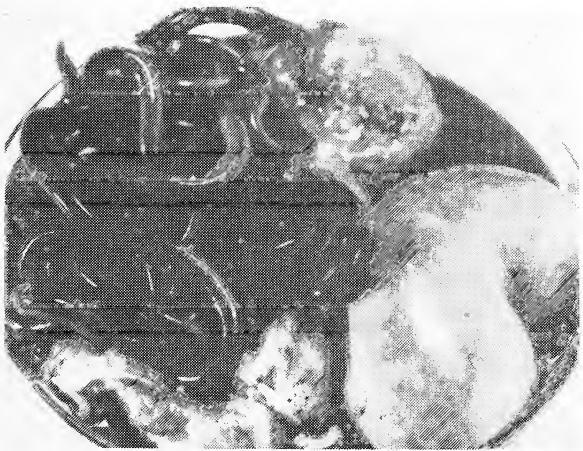
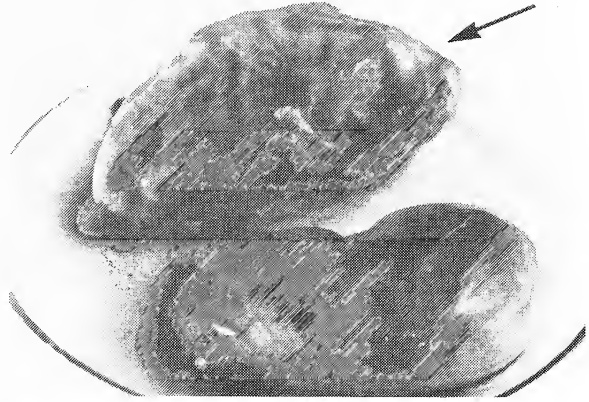
The single urine sample that showed eggs in great numbers was from the wolf received alive (Fig. 2). The other samples were negative. Of the four animals, two were parasitized with adult *D. renale* in the right kidney. All animals had a compensatory hypertrophy on the left kidney.

In both animals where adult parasites were found, the destruction of the renal parenchym was complete, with only a thickened fibrous capsule containing a small quantity of brownish liquid. In one of them an adult worm 14.8cm in length was found. In the other wolf, six adult female worms (Fig. 3, 4 & 5) varying in length from 25-53cm in length were found.



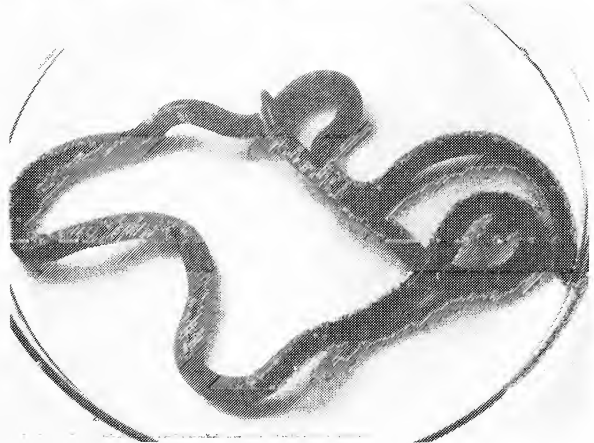
**FIGURE 2 - Egg of *Diocotophyme renale*.**

**Figure 3 - Right kidney (arrow) infected with *D. renale* (external aspect)**



**Figure 4 - Six *D. renale* (Female)**

**Figure 5 - *D. renale* Female 53.0cm in length.**



## Occurrence of *Diectophyme renale* in Maned Wolves, *Continued*

### DISCUSSION AND CONCLUSION

All the Maned wolves necropsied were born in the wild and were infected with *D. renale*. While this parasite is commonly found in this canid species in the wild or in captured animals, it has not been reported in Maned wolves born in captivity.

This fact reinforces the thesis that the ingestion of fish, amphibians, crustaceans, molluscs (intermediary hosts) parasitized by larvae of *D. renale* by the definitive host (paratenic host) is necessary for the biological cycle since these kinds of food are not generally available in captivity.

The high incidence of *D. renale* in Maned wolves in the wild suggests that *C. brachyurus* may be one of the natural hosts and thus of importance in the epidemiological chain of the parasite (Costa Lima, 1988).

The frequency of parasitism by *D. renale* is probably associated with the high production of eggs by the female parasite, their elimination in urine and the behavioral habits of the wolf, especially the demarcation of trails and territory with excrement. The Maned wolves inhabit humid places and use paths through fields and forests.

It is possible that the intermediate hosts resident in these habitats have a constant and high risk of parasitism. The infection of crustaceans, mollusks and earthworms by ingesting eggs of *D. renale* is made easy by the longevity of these eggs in the environment, up to 24 months (Dacorso Filho et al, 1984; Freitas, 1976). On the other hand, the infection of fish and amphibians in the food chain, and the risk of infection by paratenic hosts would explain the fact that parasitism is common in the final or definitive host.

The presence of six parasites in one animal is a rare finding. All specimens found in this case were female, with intense production of eggs.

Since all the subject animals came from the wild and from areas near Uberlandia, systematic investigations to clarify the biological cycle of *D. renale*, to determine the zoonotic potential, the incidence in dogs and the possible occurrence of human diectophymiasis in the region should be undertaken.

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(The AKF staff would like to thank Dr. C. Dietrich Schaaf, Assistant Director and General Curator at Zoo Atlanta, Atlanta, GA for his assistance in reviewing this manuscript.)



## Wisconsin Regional Primate Research Center Offers Audio Visual Resources Catalog and Directory of Primatology

The 1993 edition of the catalog, *Audiovisual Resources in Primatology*, is now available. The catalog contains an annotated list of audiotapes, videotapes, slide sets and films, and the number of slides held for each species in the audiovisual collection of the Wisconsin Regional Primate Research Center (WRPRC) Library. Indexes are provided for species and titles. Introductory material in the catalog explains procedures for borrowing and/or contributing materials.

The catalog sells for \$10.00 in the U.S. and \$18.00 outside the U.S. To order a copy send your name, institution, complete mailing address and telephone number to: Audiovisual Service, Wisconsin Regional Primate Research Center, 1220 Capitol Court, Madison, WI 53715-1299, USA. Checks (U.S. Funds only) should be made payable to Wisconsin Regional Primate Research Center.

The newsletter *Primate Library Report: Audio-Visual Acquisitions*, issued periodically, covers the period between editions of the catalog. It lists 30-40 new items added to the collection in each issue. Complimentary subscriptions of this newsletter are available upon request.

Persons seeking a comprehensive search of audiovisual materials on a topic or species may call the Primate Center Library at 1-(608) 263-3512 for a search of its audiovisual database. This comprehensive database contains not only records of AV items held by the WRPRC Library, but also information on other materials.

The WRPRC also publishes the International Directory of Primatology. The purpose of the directory is to enhance communications among the many organizations and individuals involved in primate research, conservation and education. It can be used by primatologists as a desk-top working tool or by educators, librarians, students and the general public as a guide to primate programs and information resources.

The directory is divided into five organizational sections and four indexes. The organizational sections cover 1) geographically arranged entries for major primate centers, laboratories, educational programs, foundations, conservation organizations and sanctuaries, 2) current field sites with program and contact information, 3) members of groups involved with nonhuman primate population management, 4) professional primate societies and 5) major information sources in the field. Access to this information is supported by organizational, species, subject and name indexes.

Copies of the 1992 International Directory of Primatology 225 pages spiral-bound, are available in the U.S. for \$10.00 (includes surface postage and handling). To offset mailing costs, the price to other countries is \$18.00 (U.S. funds). Electronic and phone orders are welcome. Send orders to Larry Jacobsen, IDP Coordinator at address above. Phone orders at number previously listed. FAX is 1-608-263-4031; E-mail: library@primate.wisc.edu.



# THE ASSOCIATION OF BRITISH WILD ANIMAL KEEPERS

## An Historical Overview

By  
*John Partridge*

In April, 1973, two like-minded zoo keepers floated the idea of starting a professional association for those interested in the husbandry of wild animals. Aimed principally at those people working in zoos and similar institutions but with the intention of also bringing into the fold others who had an interest in either keeping non-domesticated animals at home or simply liked visiting zoos, they wrote to all of Britain's major zoos seeking their reaction to the idea. From there, a small group was set up and the new association - The Association of British Wild Animal Keepers (ABWAK) - was launched on 10 May, 1974.

ABWAK is administered by a General Council of fifteen elected members who meet twice a year to formulate policy and to discuss the general direction that should be taken by the Association. From those fifteen people, five are selected to take up the offices (Chairman, Treasurer, etc.) of the organization. This Executive Committee meets periodically during the year and is responsible for the day-to-day running of the organization.

From the very start, ABWAK set itself four major objectives:

### **1. To provide, encourage and organize facilities for the meeting of keepers of wild animals.**

Each year, without fail, a symposium has been arranged. Held usually at a major zoological collection and with a specific topic in mind, this annual event has covered many areas of wild animal husbandry from pachyderms to parrots; from hand-rearing to considering the future of zoos. Always popular, they have brought together zoo keepers, zoo managers and curators, vets, field biologists and a whole host of individuals concerned about wild animals in captivity.

March of 1993 saw an extension to the symposium theme when, for the first time in the Association's history, a two-day conference was held at Edinburgh Zoo and included invited speakers on a variety of zoo-related matters; follow on workshops and subsequent discussion periods led by the speakers; conducted tours of the zoo's facilities and a dinner with guest speaker on the evening of the first day.

In addition, a variety of meetings have been held all over the country, giving members the opportunity to meet and to discuss problems, exchange ideas and to build up a network of friends and contacts to whom they can turn in the future for advice and assistance. Such meetings have included formal ones with guest speakers; quizzes and conducted tours of selected zoos. More recently, an agreed scheme with a number of zoos allows members free admission to those collections. This more informal arrangement allows individuals to occasionally meet up in small groups whenever they wish to do so.

### **2. To improve cooperation among wild animal keepers both nationally and internationally.**

Without any doubt at all, the Association's greatest and most successful means of communication has been its bi-monthly journal: *RATEL*. Originally consisting of several pieces of A4-sized paper stapled together and produced three times a year, it has been developed over the years into an informative and widely distributed journal. Now much bigger in thickness and packaged in a more manageable A5 composition, it is sent to people all over the world. Topics within its cover have included: general articles on wild animal husbandry; news from the zoo world; readers's letters; book reviews; quizzes; crosswords and surveys. *RATEL* has proved to be an excellent communicator.

### **3. To improve, through education, the professional competence of all involved with wild animal husbandry.**

## **ABWAK - An Historical Overview**, *Continued*

The education process is now well established. Both *RATEL* and the published proceedings of the annual symposia are important routes for passing on valuable information to keepers. More recently, a set of guidelines was published outlining the day-to-day management of wild cats. A second set - this time about bears and raccoons - has recently been completed.

A more formal means of educating keepers has been through the Animal Management Course administered by the National Extension College in Cambridge. Along with several other animal bodies, ABWAK played a central role in the creation of this course. Members of the Council are also involved in representing the zoo industry in National Vocational Qualifications in animal care.

### **4. To support the conservation of wildlife throughout the world.**

In spite of its relatively small budget, ABWAK has been able to provide financial support for a number of zoo or field conservation projects.

In 1990, financial aid was given to the International Council for Bird Preservation (ICBP) in support of its undertaking to produce and distribute information display boards for use in zoos and bird gardens. In the same year, ABWAK was able to give a generous donation to the Sebakwe Black Rhino Project, an undertaking aimed at conserving the ever dwindling numbers of black rhinoceros living in Zimbabwe. More recently, in September 1992, the ABWAK Council agreed to grant aid to a North American publication entitled "The Shape of Enrichment" which sets out to publish information on environmental enrichment for zoo animals. Very much in its infancy, this booklet, to be produced quarterly, intends to make available ideas to those people who may be interested in the subject. Help has also been given to the Indian Zoo Outreach Organization by sponsoring one of their regular publications.

Of course, many other worthy causes received the Association's support by having information published in *RATEL*, thus receiving additional publicity.

The Association of British Wild Animal Keepers has come a long way in its eighteen year-long history and has seen many changes in the zoo world. Attitudes towards keepers have changed. In 1974, hardly any zoos employed female keepers and those that did paid them less than the men for the same work done! Today, there are very many more women keepers, receiving equal pay and rightly being accepted for their ability.

Keepers have become more educated and are expected to carry out many more responsible tasks. It is now accepted that there is a lot more to wild animal husbandry than simply using a bucket and brush. Keepers are expected to observe their animals; to keep records of their behavior patterns; to publish their findings and to become more involved in captive breeding programs. At least, that is the theory and much of this progress has been achieved during the lifetime of the Association.

There is still much to do and there are many difficulties ahead that have to be faced and overcome. I very much hope that ABWAK and its membership will be in the forefront of future activities and continue to support the very real need for caring for wild animals in captivity.

If you would like more information about ABWAK, please write (enclosing a stamped, self-addressed envelope) to: ABWAK, 12, Tackley Road, Eastville, Bristol BS5 6UQ, United Kingdom.



Founded 1974



# Book Review

## Waterfowl, an Identification Guide to the Ducks, Geese and Swans of the World

By Steve Madge and Hilary Burn - ©1988  
Houghton Mifflin Co., 2 Park St., Boston, MA 02108  
298 pgs Hardbound/49 pgs color illustrations \$35 US

*Review by Gary A Powell  
Manager of Facilities and  
Development, Waimea Falls  
Park, Haleiwa, HI*

What a marvelous addition to the libraries and collections of professional and amateur bird enthusiasts the world over! With detailed attention to observation notes and superb illustrations Waterfowl, An Identification Guide to the Ducks, Geese and Swans of the World is a reference work that will prove invaluable in the study of waterbirds.

The work is aided by an introductory section on field observations. The notes given here such as "Wild hybrids are rare, but are sometimes encountered. Males may show relatively obvious features of their parents, but not necessarily so." add depth to understanding the complexity of field identification. Generous black and white drawings illustrate detailed descriptions and supplement Ms. Burn's wonderful paintings.

The color plates contain over 700 illustrations of species showing their sex characteristics, appearance in flight, and other features. And while they are grouped in mostly like-kind combinations, they are further clarified by short captions on the facing page of each plate. Reference to more detailed text information is given as well. One of the more interesting features of this work is the geographical distribution map for each species listed.

The Systematics section of this work follows the sequencing and genera listing by Livezey (1986) and further by Johnsgard (1978). A few exceptions are so noted. Vernacular names are dealt with adequately with the deletion of some locally familiar notations. The text is well-referenced and a good bibliography is provided at the end of the text.

Descriptions include details of plumage, bare parts, vocal characteristics, habits and habitat notes as well as distribution and population sketches. The writing is concise and detailed without being dry and boring.

Concluding with a small glossary and comprehensive index, Waterfowl, An Identification Guide to the Ducks, Geese and Swans of the World, is an excellent field guide and reference work.

## The Natural History of Antelopes

By C.A. Spinage, 1986  
Facts on File, Inc., 460 Park Ave. South, NY, NY 10016  
203 pgs. Hardback \$24.95

*Review by Cindy Pinger  
Hoofstock Keeper  
Memphis Zoo & Aquarium  
Memphis, TN*

Clive Spinage's book The Natural History of Antelopes is an excellent, clearly written reference book for anyone interested in African antelopes. Although 111 species of antelope are known to exist, Spinage draws attention to the fact that a standard zoology text devotes only 3 of 786 pages to antelope. Reasons for this, according to Spinage, are a lack of knowledge about antelopes, and a hesitancy to describe such a large, diverse and complex group of animals. The author spent 30 years living and working with African wildlife. It must be noted that since the majority of antelope (two-thirds) live in Africa and the author is most familiar with African antelope, this book contains information on only the African species.



## Book Review, *Continued*

The first section of the book deals with the classification and fossil history of African antelope. From the appearance of *Eotragus*, the "dawn deer", 20 million years ago, to the amazing diversity of currently existing species, the author gives a readable, enjoyable description of an often dry subject.

The next two chapters deal with antelope adaptation and habitats frequented by antelope. Chapter Two provides a clear description of the process of rumination. Even though I have been around ruminants most of my life, I never really had a good understanding of why some hoofed animals must spend so much time resting and chewing their cud until I read this part of the book. Habitats and the certain species occupying them are described in great detail.

Chapter Four discusses how antelopes "conquer their environment". In other words, it explains the special adaptations, such as conserving water and maintaining body temperature, that some species have developed to deal with an often harsh environment. The next section delineates matters related to food, feeding and migration. Mainly discussed are the types of food preferred by certain antelopes.

Most of the remainder of the book focuses on the social behavior of antelopes. Included in this section is a chapter on mother-infant behavior, risks that antelope must face (predation, disease), territoriality and reasons for the development of territoriality and communication. I am sure that many hoofstock keepers will recognize many of the displays and communications that Spinage describes. This part of the book gives a good idea of just what the life of an antelope is like and it makes for very interesting reading.

The last chapter addresses the issue of farming antelope for meat. Since the antelope are adapted to the living conditions, they should theoretically yield more meat with less destruction of the habitat than cattle. Especially interesting is the description of the success of Russian eland farms and the comeback of the Saiga antelope. Also included is an appendix that gives a summary of known information on the African species.

In conclusion, this book belongs on the shelf of anyone interested in African antelope. It includes some wonderful color and black and white photographs of the animals in their native habitats. The author obviously has a great affection for these animals and his anecdotes about animals that he had raised are entertaining.

## Snakes and Other Reptiles in Action

### Whales and Dolphins in Action

By Tanner Otley Gay Illustrations by Jean Cassele

Alladin Books 1991, Macmillan Publishing Co.

866 Third Avenue, New York, NY 10022.

Hardback 16 pgs. \$7.95

*Review by Melba T. Brown*

*Pinniped Trainer*

*National Zoo, Washington DC*

Everyone loves a good pop-up book. Intervidual Communications, Inc. has produced a series of such books for 'early readers'. Each page of Snakes in Action and Whales in Action comes alive with colorful depictions of a variety of reptiles and marine mammals. The reader is attracted to graphic wildlife scenes which include a cobra rearing its head; a corn snake shedding its skin; a spotted dolphin giving birth; and a sperm whale feasting on a giant squid. The text provides factual information and there are diagrams included as well.

Other titles in this series include Sharks and Dinosaurs and Their Relatives. Children of all ages would get a kick out of these books. In the midst of having fun, they would learn factual information about these animals.



## L.I.N.K.

### (Liaison and Information Network for Keepers)

Coordinator for the LINK System: Mark de Denus, Assiniboine Park Zoo, 2355 Corydon Ave., Winnipeg, Manitoba, Canada R3P 0R5. (204) 986-6921 [w]; (204) 837-2916 [w]

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Provinces of Alberta & British Columbia - Grant Tkachuk, 10139 157th St., #206, Edmonton, Alberta T5P 2T9

*Institutions wishing to advertise employment opportunities are asked to send pertinent data by the 15th of each month to: Opportunity Knocks/AKF, 635 Gage Blvd., Topeka, KS 66606. Please include closing dates for positions available. There is no charge for this service and phone-in listings of positions which become available close to deadline are accepted. Our phone is 1-800-242-4519 (U.S.); 1-800-468-1966 (Canada). Our FAX is 913-273-1980.*

**ZOOKEEPER**...accepting resumes for full-time Keeper positions, BIRD (psittacines, cranes, waterfowl) and MAMMAL (ungulates, primates, cougars, cheetahs). Degree or equivalent zoo related experience. Daily duties include care, feeding, habitat upkeep, breeding programs, record keeping, medical coordination, training, acquisitions, etc. Must be willing to work weekends/holidays. Starting salary \$15,000-\$20,000 with year-end bonus and benefits. Excellent growth potential. Salary commensurate with experience. Send resume/references to: Washington Zoological Park, 19525 SE 54th, Issaquah, WA 98027. **Positions open until filled.**

**ZOOKEEPER**...the North Carolina Zoological Park is now accepting resumes for approximately 30 positions (Keeper I and Keeper II) on a full-time, year-round, on-going basis from July '93 - January '94 for openings in Rocky Coast, Carolina Coastal Plain, and Carolina Streamside and North American Plains as well as a contact area. A 4-year degree in zoology or a related field is required for both Keeper I and II positions. Two years of zoo experience or an equivalent combination of education and experience is required for Keeper II positions. A minimum of 1 year zoo experience in one or more of the following specialty fields is desired: ungulates, carnivores, small mammals, pinnipeds, puffsins, reptiles, amphibians, and fish. Starting salary \$16,000 - \$17,000 plus benefits. Send resume and cover letter to: Elly Walters, Animal Division, North Carolina Zoological Park, Rt. 4, Box 83, Asheboro, NC 27203.

**WITHDRAWN**

The following three (3) positions are available at the Fort Worth Zoo. For all positions send letter, resume, and references **by 30 September** to: Wanda Smallwood, Personnel Dept., City of Fort Worth, 1000 Throckmorton St., Fort Worth, TX 76102.

**ZOO ATTENDANT II - Herpetologist**...requires minimum of one year paid experience in the care of reptiles and amphibians, including venomous species. Preference will be given to candidates who demonstrate a strong interest and background in lizard husbandry and propagation and those who have earned a Bachelors degree with a major in Zoology or related field.

**ZOO ATTENDANT II - Elephants**...requires high school diploma and one year's salaried experience in the care of elephants. Experience with multiple cow breeding program desired. Will participate in all aspects of the Asian elephant breeding program involving multiple bulls (protected) and a cow herd (free contact). Duties include normal elephant handling and maintenance as well as extensive record keeping.

**ZOO ATTENDANT I - Birds**...requires an individual with an interest and dedication in aviculture in a Zoological Park setting. Experience and/or degree preferred.

**BIRD KEEPER**...requires experience working with captive exotic birds. Responsibilities include the care, feeding and cleaning of an extensive collection geared towards the breeding of rare species. Warm outdoor Florida working environment in a private breeding facility closed to the public. Looking for that special someone for long-term employment. Salary commensurate with experience. Send resume to: Dr. Richard L. Miller, 5700 S.W. 130 Avenue, Fort Lauderdale, FL 33330. Phone: (305) 434-8599 FAX: (305) 434-4889.

**HEAD ZOOKEEPER**...the Kamloops Wildlife Park, a medium sized zoological institution housing 65 species of animals located in British Columbia, is offering this position. The Society's mandate of conservation through education is pursued energetically as demonstrated by participation in SSP programs, conservation programs and an education department. Qualifications for the position include previous professional animal care experience and/or formal training with another zoo totaling more than 10 years. A four-year degree in Zoology, Animal Science, or related discipline preferred. The ideal candidate will also have experience with research and publication and be an authority on a

## Opportunity Knocks, *Continued*

specific species. Strong leadership and supervisory experience required. Handyman abilities also considered an asset. Responsibilities include working along side other animal care staff; daily cleaning and maintenance of animals and their habitats; responsible for overall supervision and coordination of the zookeeping department. Assisting in planning and development of new and existing exhibits. Providing leadership and setting example as a senior staff member. Should be good natured, hard working and dedicated to park mandate and to building team spirit. Send resumes by 31 August 1993 to: The General manager, Kamloops Wildlife Park, P.O. Box 698, Kamloops, BC, V2C 5L7, Canada.

The following two (2) positions are available at the El Paso Zoo, El Paso, TX. Deadline for inquiries is 8 October 1993. For further information and application materials, please contact: Dick Moody, Personnel Dept., City of El Paso, 2 Civic Center Plaza, El Paso, TX 79901-1196, phone (915) 541-4892 AA/EOE.

ZOO KEEPER...City of El Paso. (Salary: \$16,731.78 - \$19,057.48 annually). Completion of high school or G.E.D. and one year experience in the care of caged animals; or an equivalent combination of training and experience.

SENIOR ZOO KEEPER...City of El Paso. (Salary: \$18,462.08 - \$21,325.20 annually). Completion of high school or G.E.D. and three years experience in the care of caged animals including one year experience as a Zoo Keeper; or an equivalent combination of training and experience.

The following two (2) positions are available at the Philadelphia Zoo, Philadelphia, PA. Send resume and cover letter to: Human Resources, Philadelphia Zoo, 3400 West Girard Ave., Philadelphia, PA 19104.

ANIMAL KEEPER...requires two years experience or a degree and one year of experience with captive exotics and strong written and oral communication skills. This is an open relief position assigned to areas as needed. Responsible for care, feeding, health/safety of animals; exhibit maintenance; behavior observation, interaction with the public.

ANIMAL RECORDS ASSISTANT...requires degree in Biology or Zoology, one year administrative experience and knowledge of animal taxonomy, scientific nomenclature, husbandry, behavioral data collection and animal record systems. Experience with Word Perfect 5.1 and ARKS preferred. Responsible for processing and maintenance of animal records, preparation of division reports and shipping documents and coordination of animal shipping arrangements.



### 1994 AAZPA Regional Conferences

6-8 March 1994 - Central Regional Conference. For more information, contact Donna Chain, Oklahoma City Zoo, 2101 N.W. 50th St., Oklahoma City, OK 73111 (405) 424-3344.

20-22 March 1994 - Southern Regional Conference. For more information, contact Beverly Rutland, Montgomery Zoo, P.O. Box ZEBRA, Montgomery, AL 36109 (205) 240-4900.

10-12 April 1994 - Western Regional Conference. For more information, contact Jean Miller, Micke Grove Zoo, 11793 North Micke Grove Road, Lodi, CA 95240 (209) 953-8840.

17-19 April 1994 - Great Lakes Regional Conference. For more information, contact Carol Pedersen, Blank Park Zoo, 7401 S.W. 9th St., Des Moines, IA 50315 (515) 285-4722.

1-3 May 1994 - Northeastern Regional Conference. For more information, contact Troy Stump, ZOOAMERICA, North American Wildlife Park, 100 West Hersheypark Dr., Hershey, PA 17033 (717) 534-3862.



# AAZK Membership Application

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October 1993

**ANIMAL KEEPERS' FORUM**, 635 S.W. Gage Blvd., Topeka, KS 66606  
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Diet Notebook, Mammals, Vol. II - Susan Bunn Spencer, Bronx Zoo



# Table of Contents

|  |           |
|--|-----------|
| Scoops & Scuttlebutt.....  | 338 - 339 |
| Coming Events.....   | 340       |
| Bowling for Rhinos Update/New AAZK Members.....  | 341       |
| Legislative Outlook/Recipes for a Non-Toxic Home.....  | 342       |
| Metro Toronto Zoo Ostrich Rearing Report 1992.....   | 344 - 346 |
| Hockey's Florida Panthers to Benefit Endangered Namesake.....  | 346       |
| H.E.L.P. Sanctuary Offers New Life for Pointe Noire Chimps.....  | 348 - 350 |
| Births & Hatchings.....  | 350       |
| Elephant Set (Anesthesia).....   | 351 - 353 |
| Publications Available.....  | 353       |
| Chapter News.....  | 354 - 355 |
| Rhino Training.....  | 356 - 358 |
| Evaluation of Enrichment Devices for Captive N.A. River Otters.....  | 359 - 363 |
| Information Please (Cheetah husbandry).....  | 363       |
| Enrichment Options (Prosimians, Apes, Cats, Condors).....  | 364       |
| Book Reviews (Great Cats:Majestic Creatures of the Wild; Wild Cat Species of the World; and Macmillan Animal Encyclopedia for Children)..... | 365 - 367 |
| The Return of the Wolf (Debate on Yellowstone Reintroduction Continues).....   | 369 - 370 |
| L.I. N.K. List of Regional Coordinators.....   | 371       |
| Opportunity Knocks.....  | 372       |

## Information for Contributors

Animal Keepers' Forum publishes original papers and news items of interest to the animal keeping profession. Non-members are welcome to submit articles for consideration.

Articles should be typed or hand-printed and double-spaced. All illustrations, graphs, charts and tables should be clearly marked, in final form, and should fit in a page size **no greater than** 15cm x 25½cm (6" x 10"). Literature used should be cited in the text (Brown, 1986) and alphabetically in final bibliography. Avoid footnotes. Include scientific name of species (as per ISIS) the first time it is used. Thereafter use common name. Use metric system for weights and measurements (standard equivalents may be noted in parenthesis). Use the continental dating system (day-month-year). Times should be listed as per the 24-hour clock (0800, 1630 hrs. etc.). Black and white photos **only** are accepted. Color slides should be converted to black and white prints (minimum size 3" x 5") before submission. Clearly marked captions should accompany photos. Please list photo credit.

Articles sent to Animal Keepers' Forum will be reviewed by the editorial staff for publication. Articles of a research or technical nature will be submitted to one or more of the zoo professionals who serve as referees for AKE. No commitment is made to the author, but an effort will be made to publish articles as soon as possible. Lengthy articles may be separated into monthly installments at the discretion of the editor. The editor reserves the right to edit material without consultation unless approval is requested in writing by the author. Materials submitted will not be returned unless accompanied by a stamped, self-addressed envelope. Telephone or FAX contributions of late-breaking news or last-minute insertions are accepted as space allows. However, long articles must be sent by U.S. mail. Phone is (913) 272-5821 Ext. 31. FAX (913) 273-1980.

## DEADLINE FOR EACH EDITION IS THE 15TH OF THE PRECEDING MONTH

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*This month's cover features another in the series "Keepers in Action" drawn by artist Yoshi. Yonetani of the Zoo Design & Education Lab (ZooDEL) in Kobe, Japan. This piece features AAZK Vice President Jan McCoy of Metro Washington Park Zoo in Portland, OR. Jan, who is in charge of the education program animals at MWPZ, is shown feeding her trained young Andean condor (Vultur gryphus). The Andean condor, native to the high mountain ranges in South America, is currently being used as a "surrogate/test" species to help scientists determine the suitability of habitat for the release of the highly endangered California condor. Thanks, Yoshi!*

# Scoops and Scuttlebutt

## Associate Editor Departs for Oregon

Gretchen Ziegler, Area Supervisor at the Topeka Zoo, and AKF Associate Editor since September of 1991, has left Topeka to take on a new position at Wildlife Safari in Winston, OR. While she may be a fair distance away, Gretchen has expressed a desire to remain involved with AKF and will continue to work on the Enrichment Options column with Associate Editor Kayla Grams, as well as carry out other duties and projects as requested by AKF Editor Susan Chan. Gretchen has been an important part of the editorial staff the past two years and we are happy that she wishes to remain involved in the production of our journal. Anyone wishing to reach Gretchen may do so at Wildlife Safari, P.O. Box 1600, Winston, OR 97496-0231. AKF submissions and correspondence should still be routed through the AAZK Administrative Offices, 635 S.W. Gage Blvd., Topeka, KS 66606-206.

## AAZK Research Grants Available for 1994

The American Association of Zoo Keepers, Inc. announces the availability of two \$750.00 research grants in the field of zoo biology. Interested applicants should direct their inquiries to Sue Barnard, Chairperson, AAZK Research/Grants Committee, Zoo Atlanta, Department of Herpetology, 800 Cherokee Ave., SE, Atlanta, GA 30315. The deadline for submissions is **1 March 1994**.

## AAZPA Issues Position Statement on Elephant Management

The following statement was sent to our offices by AAZPA President Stephen R. Wylie with a request that it be published in AKF to make our membership aware of AAZPA's position on elephant management:

"The Board of Directors of the American Association of Zoological Parks and Aquariums philosophically believes the future management of captive elephants should be based on methods associated with protected contact. However, the Board urges that all institutions maintaining elephants assign appropriate personnel the task of familiarizing themselves regarding the various techniques and philosophies associated with managing captive elephants. This should include, but not be limited to, the topics of free contact, confined contact, protected contact, and no contact. Additionally, with the health and welfare of captive elephants and their keepers in mind, institutions should establish written protocols and guidelines supporting the use of consistent management techniques.

An elephant restraining device reinforces, as well as aguments, animal and human safety. In an advisory, rather than a regulatory capacity, the AAZPA Board strongly recommends the inclusion of an elephant restraining device in all facilities that either currently maintain elephants, or anticipate doing so in the future. The Board also reiterates its earlier recommendations that two trained keepers be physically present when elephants are being handled, regardless of the management technique being used.

## Scoops & Scuttlebutt, *Continued*

The AAZPA Board of Directors is currently preparing a position paper which will clearly identify the dangers associated with maintaining and managing captive elephants, as well as the various management options currently available and the role of elephant SSP's. Portions of this paper will also be incorporated in future AAZPA Management School curricula, where appropriate."

Questions or comments concerning this statement should be directed to AAZPA President Stephen R. Wylie, Director, Oklahoma City Zoo, 2101 NE 50th St., Oklahoma City, OK 73111-7199.

## Keepers Encouraged to Visit Cano Palma Biological Station

--submitted by Marilyn Cole, Metro Toronto Zoo

Cano Palma Biological Station was founded by two Canadian zookeepers as a center for research, conservation and education. It is located on the northeastern Atlantic coast of Costa Rica in a biological corridor of lowland tropical rainforest.

Here is an opportunity for you to experience first-hand the wonderful diversity of life in the rainforest. Hear the roar of a jaguar; wake up to the call of the howler monkey; watch the Disney-like morpho butterflies; witness the mystery of nesting sea turtles. And much, much more.

We want to share these wonderful experiences with our fellow keepers, and invite you to visit. For more information, please contact Marilyn Cole, Box 335, Pickering, Ontario L1V 2R6, Canada. Phone (416) 683-2116; FAX (416) 392-4979.

## Wisconsin Regional Primate Research Center Library Offers AV Service

The Audiovisual Service of the Wisconsin Regional Primate Center Library collects and preserves the vocal repertoire and visual record of nonhuman primate species. The collection consists of slides, slide sets, videotapes, audiotapes, and films that deal primarily with primatology, conservation, anthropology, and animal welfare. Items are available for loan for scientific, educational or research purposes. A catalog of materials held by the Center is available and may be purchased for \$10 in the U.S., or for \$18 abroad, from the Primate Center Library. Catalogs may be orderd from Primate Center Library, 1220 Capitol Court, Madison, WI 53715. Checks should be made payable to: Wisconsin Regional Primate Research Center. Anyone may visit the library and borrow AV materials without cost. Materials which must be mailed to borrowers are subject to service fees. Details are included in the catalog. For futher information you may contact Ray Hamel at (608) 263-3512.



## **PRIMATE TALK - A Discussion Forum for Primatology**

The Wisconsin Regional Primate Research Center (WRPRC) at the University of Wisconsin at Madison, hosts an electronic mail listserver called PRIMATE-TALK. PRIMATE-TALK is an open forum for the disucssion of primatology and related subjects. This forum is open to electronic mail users world-wide with an interest in nonhuman primates. Currently there are over 300 P-T members from 15 countries. Subject matter may include, but is not limited to: news items, meeting announcements, research issues, information requests, veterinary/husbandry topics, job notices, animal exchange information, and book reviews.

People with Internet, BITNET or UUCP addresses can communicate with PRIMATE-TALK. Users with other networks should contact the WRPRC. If you are interested in joining PRIMATE-TALK, send a message to PRIMATE-TALK-REQUEST @ PRIMATE.WISC.EDU stating that you would like to sign on. Messages to the list are sent to PRIMATE-TALK @ PRIMATE.WISC.EDU. If you have questions about electronic access to the list, you may call Larry Jacobson, Head of Library Services at the WRPRC Library at (608) 263-3512, or FAX at (608) 263-4031. You may also write to the WRPRC Library, 1220 Capitol Court, Madison, WI 53715-1299 USA.



# Coming Events

## National Symposium on Urban Wildlife

October 22-26, 1993

Seattle, WA

For further information contact Dr. Lowell Adams, National Institute for Urban Wildlife, 10921 Trotting Ridge Way, Columbia, MD 21044 (301) 596-3311. To be held at Embassy Suites Hotel, Seattle-Bellevue, WA.

## International Marine Animal Trainers Association 21st Annual Conference

November 7-12, 1993

Kailua-Kona, HI

Hosted by Dolphin Quest and headquartered at the King Kamehameha Hotel on the big island of Hawaii. For further information contact Julie Scardina-Ludwig, 1st Vice Pres., c/o Sea World of California, 1720 S. Shores Road, San Diego, CA 92109.

## International Conference on Orang-utans: The Neglected Ape

March 5-8, 1994

Fullerton, CA

An International Conference on Orang-utans: The Neglected Ape will be co-hosted by the California State University, Fullerton; the Zoological Society of San Diego; and the Atlanta/Fulton County Zoo Inc. Paper and poster presentations are scheduled for 5-7 March, in Fullerton, CA, followed by a post-conference trip to the San Diego Zoo on 8 March, with attendees participating in workshops and tours. For registration information and abstract guidelines, please contact: Norm Rosen, Dept. of Anthropology, California State University, Fullerton, CA 92634-9480, FAX: 310-798-0576.

## ARAZPA/ASZK Annual Conference

April 17-22, 1994

Darwin, NT, Australia

Joint meeting of the Australasian Regional Association of Zoo Parks and Aquaria and the Australasian Society of Zoo Keepers will be hosted by Territory Wildlife Park and Tipperary Sanctuary. For further information contact: Michelle Nuske, Conference Coordinator, Territory Wildlife Park, P.O. Box 771, Palmerston, NT 0831, Australia.

## 1994 AAZPA Regional Conferences

**6-8 March 1994** - Central Regional Conference. For more information, contact Donna Chain, Oklahoma City Zoo, 2101 N.W. 50th St., Oklahoma City, OK 73111 (405) 424-3344.

**20-22 March 1994** - Southern Regional Conference. For more information, contact Beverly Rutland, Montgomery Zoo, P.O. Box ZEBRA, Montgomery, AL 36109 (205) 240-4900.

**10-12 April 1994** - Western Regional Conference. For more information, contact Jean Miller, Micke Grove Zoo, 11793 North Micke Grove Road, Lodi, CA 95240 (209) 953-8840.

**17-19 April 1994** - Great Lakes Regional Conference. For more information, contact Carol Pedersen, Blank Park Zoo, 7401 S.W. 9th St., Des Moines, IA 50315 (515) 285-4722.

**1-3 May 1994** - Northeastern Regional Conference. For more information, contact Troy Stump, ZOOAMERICA, North American Wildlife Park, 100 West Hersheypark Dr., Hershey, PA 17033 (717) 534-3862.



# Bowling for Rhino .....An Update



from *Patty Pearthree, BFR Coordinator*  
*Indianapolis Zoo, Indianapolis, IN*

Money is still being collected from a few Chapters but our total is already over \$100,000.00 for 1993. The top two money raisers who win a two-week trip to the Ngare Sergoi Rhino Sanctuary in Kenya are:

Richard Buthe from Philadelphia with \$5,070.00 and  
Karen Konwin from Lincoln Park with \$4,960.00

The following high money raisers win a Brunswick® bowling ball or bag:

Alice Orr from Central Florida with \$4,546.60  
Linda Waltmire from Portland with \$3,754.00  
Rose Baker from Indianapolis with \$2,298.00  
Scott Woodward from San Diego with \$1,854.00  
Patty Pearthree from Indianapolis with \$1,210.00  
Ed Curtis from Detroit with \$1,003.00

The top three Chapters were Philadelphia with \$13,167.74; Portland with \$12,270.21; and Lincoln Park with \$10,256.32. Thanks to all participants for all your hard work!

During the Atlanta Conference I will be presenting a proposal to expand our BFR funding to include Javan and Sumatran rhinos. I will propose that the first \$100,000.00 each year go to Ngare Sergoi, with any excess being divided among 2-3 other sanctuaries.



## AAZK Announces New Professional/Contributing Members

|  |   |
|--|---|
| Andrea Greenwood, N. E. Science Cntr.(MA)            | Susan Rifai, Capron Prk Zoo (MA)          |
| Sheri Hickok, Cape May County Zoo (NJ)               | Marian Glick-Bauer, Prospect Prk. (NY)    |
| Douglas Mase, Wildlife Conservation Prk. (NY)        | Richard Allen Fuss, Zoo Atlanta (GA)      |
| Jana Foucwe, no zoo listed/ Jacksonville, FL         | Heidi Fowle, Discovery Island (FL)        |
| Pamela Monseur, Miami Metrozoo (FL)                  | Michelle Devlin, Busch Gardens (FL)       |
| Melissa Lauer, Lowry Pary Zoo (FL)                   | Vance Alford, Louisville Zoo (KY)         |
| Amy Gregory, Saginaw Children's Zoo (MI)             | Julie Gilmore, Milwaukee Zoo (WI)         |
| Brian Hartmann, Private Collection (IL)              | Nichole Scavone, Private Collection (IL)  |
| Ralph Bonati, Dickerson Park Zoo (MO)                | Elizabeth Duett, Audubon Institute (LA)   |
| Stephen Baynes, Audubon Institute (LA)               | Raymond Martin, Cross Ranch (TX)          |
| Melanie Haynes, Pueblo Zool. Gdns. (CO)              | Shellee Smith, Willow Park Zoo (UT)       |
| Suzanne Forrer, San Diego Zoo (CA)                   | Jody Courtney, San Diego Zoo (CA)         |
| Margit Smith, San Diego Zoo (CA)                     | Shannon Lolley, Sea World of CA (CA)      |
| Marlayna Madruga, Chaffee Zool. Gdns. (CA)           | Lisa Thelen, Coyote Point Museum (CA)     |
| Cynthia Cheney, Metro Washington Prk. Zoo (WA)       | Sue Fromveller, Walk in the Wild Zoo (WA) |
| Jan Tollenaar, Valley Zoo, Edmonton, Alberta, Canada |   |



# Legislative Outlook

Compiled by  
Phyllis Nilson-Wojcik  
Legislative Advisor



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## Wetlands: Natural Flood Control

Wetlands critical "Natural Sponges" for flood waters, are gaining well deserved national attention after the flooding of the Mississippi River. Roughly 134 million acres within the continental U.S. are subject to severe flooding, but one acre of wetland can store 326,000 gallons of water if flooded to a depth of only one foot! Iowa, Illinois, Indiana, and Missouri have all lost over 85% of their original wetlands. This loss of river valley wetlands has greatly exacerbated the disastrous flooding. Now we can certainly all look beyond preserving wetlands as a good idea for aesthetics or wildlife but actually as a critical ecosystem that could someday drastically impact our lives.

In August, the Clinton Administration announced proposals for wetlands protection. Clinton's plan would revoke President Bush's plan to exempt one percent of Alaska's wetlands, roughly 1.7 million acres, but would also exempt almost 54 million acres of former wetlands that were drained and converted into farms before 1985. Some aspects of the proposals require Congressional action such as changes in the permit process and use of watershed management plans which the National Wildlife Federation (NWF) feels would weaken wetland protection. It is also included in the plan to use the 1987 manual for the definition of a wetland until the National Academy of Sciences completes the new definition in the wetlands manual.

### URGENT: WRITE YOUR LEGISLATORS

Write in Support of: **H.R. Bill 350**  
U.S. House of Representatives  
Washington, DC 20515

**S. Bill 1195**  
U.S. Senate  
Washington, DC 20510

*>Excerpted from EnviroAction September 1993 and from personal conversation with Rick Spencer, National Wildlife Federation's Wetlands Grassroots Coordinator.*



## Recipes for a Non-Toxic Home

**Furniture Polish:** 2 Tbs. paraffin wax, 1 tsp. lemon oil, 2 cups mineral oil. Combine in a boiler and melt. Wipe on when cool to protect furniture.

**House Plant & Garden Insect Repellent:** 3 hot peppers, 3 cloves garlic, 1 gallon warm water. Boil, then age for one week. Drain through cloth and put in spray bottle for use. Tobacco, tea, or soapy water solutions can be used to control spider mites on plants.

**Floor Tile Cleaner (vinyl or ceramic):** ¼ cup vinegar, 1 ounce fragrant herb such as lavender, tansy or wormwood. Combine herbs with 2 gallons water and boil for 15 minutes. Cool, strain into bucket and add vinegar.

**Oven Cleaner:** Vinegar, salt, baking soda, steel wool. Clean grease with a rag and vinegar. Sprinkle salt on spills, let it sit for a few minutes and then scrap spill and wash the area clean. For stubborn spots, use baking soda, let it sit and then scrub with steel wool.

Source: *Environmental Review*



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**Zu/Preem**

# Metro Toronto Zoo

## Ostrich Rearing Report 1992

By  
Ariel Shamir, Keeper III  
Metro Toronto Zoo, Toronto, Ont., Canada

This protocol is to help define procedures for ostrich egg artificial incubation at the Metro Toronto Zoo. This procedure was used during the 1992 season, which resulted in the hatching and rearing of 20 ostrich chicks. Ostrich eggs were taken soon after being laid in the nest and artificially incubated in a controlled-environment incubation room. The incubator used was a Humidaire® Model 55 (forced air type) and the hatcher used was a Humidaire® Model 50 (also forced air). The eggs were incubated on their side due to the shape of the incubator (drum type) which did not allow incubating ostrich eggs in a upright position. It is possible that less disorientation occurs at hatching if eggs are incubated upright with the air cell at the top. Although the eggs were incubated on their sides, the air cell was always slightly elevated. The Humidaire® Model 55 can only accommodate 16 ostrich eggs at one time. When more than 16 eggs were incubated the hatcher Humidaire Model 50 - was temporarily used as an incubator and eggs were turned manually three times a day.

Between 1 December 1991 and 19 June 1992, a total of 94 eggs were laid from two groups of South African Ostrich (*Struthio camelus australis*). The first group consisted of one pair that produced 17 eggs. The second group consisted of one male and three females and produced 77 eggs. Out of the 94 eggs laid, 31 eggs developed. Twenty-six eggs hatched and 20 chicks were successfully raised. For more details on the eggs, see Table I.

**Table 1 - Results of Eggs Laid**

|                                      | Group 1 - 11 | Group 2 - 13 | Total |
|--------------------------------------|--------------|--------------|-------|
| Number of Eggs Laid                  | 17           | 77           | 94    |
| Number of Eggs Rec'd for Incubation  | 13           | 77           | 90    |
| Fertile Eggs                         | 2            | 29           | 31    |
| Infertile Eggs                       | 8            | 32           | 40    |
| Hatched                              | 2            | 24           | 26    |
| Death of Chicks                      | 1            | 5            | 6     |
| Rotten or Cracked Eggs Not Incubated |              | 5            | 5     |
| Sent to Another Institution          | 3            | 11           | 14    |
| Eggs Fertile That Failed to Hatch    |              | 5            | 5     |

Development was seen in eggs laid in April and onwards. Exposure to cold temperatures during the winter months (January to March) may have contributed to the development failure of the eggs up until April, assuming they were fertile. During the winter months, the eggs were removed from the nest and placed in a sand box until at least 6 or 7 eggs were collected and then sent in a box (eggs were placed in various positions including upside



## MTZ Ostrich Rearing Report 1992, *Continued*

down) to the incubation room. The eggs would sometimes sit for up to 10 days until shipped to the incubation room, but not in the proper storage condition. This procedure likely contributed to development failure, since storage conditions are very important. Ostrich eggs can be stored for up to a week if the temperature in storage of 50-55° F to prevent embryonic development. Also, 80% humidity is required to prevent water loss. As of April, the eggs were shipped to the incubation room soon after they were laid and all the eggs showed development. It is therefore recommended to ship the eggs for incubation as soon as they are laid to increase development rates.

A record system was developed to record each egg received for incubation. Incubation temperatures were taken twice a day. Eggs were weighed weekly to monitor humidity levels and water loss. The eggs received for incubation were marked for identification and washed in hot water, then paper dried. All eggs were candled to check for cracks and holes in the shell and for deformed shells. The air cell was marked with a pencil to monitor air cell growth. During the winter months, the eggs would sit for up to 8 hours in the incubation room to acclimatize to room temperature before placing them in the incubator (placing a cold egg in the incubator too soon will result in heavy sweating and rapid water loss). As outside temperatures warmed, the acclimatization time was shortened, and after May, eggs were placed in the incubator immediately after being processed. Processing of an egg consisted of (in the following order): candling, washing, weighing and marking, recording, acclimatizing time (dependent on time of year), and placing into the incubator.

The incubation period for ostrich eggs is 42-45 days, depending on the temperature levels used. The incubation temperature used in 1992 was 97° F (36.5° C), with a relative humidity (RH) of 40% (74° -78° F on the wet bulb hygrometer). At these temperature and humidity levels, eggs hatched on the 44th to 45th day.

Desirable humidity levels during incubation resulted in a water loss of a total of 12-14% of egg weight from beginning to end of incubation, or an average of 4-5g daily weight loss per egg, depending on the size of the egg. Egg weights ranged from 1330g for the smallest egg to 1687g for the largest egg. The eggs were incubated for 40 days and turned automatically every two hours. On the 41st day, eggs were moved to the hatcher. The hatcher temperature was maintained at 95° F with a relative humidity of 45% (80°-84° F wet bulb). The eggs were weighed once a week and candled at the same time. The eggs were pulled out of the incubator once a day for 20 minutes to air out. Embryonic development was seen by candling on the 12th day and when no development was seen, the eggs were removed and sent for necropsy. During hatching, eggs were candled daily to monitor when the chick had ruptured the air cell and to check for chick malpositioning. Malpositioned chicks that did not pip or hatch on their own by the 44th day were assist-hatched.

The hatcher was disinfected (with *Lysofume®*) after every hatch and was kept extremely clean. Navels of hatching chicks were treated with Betadine solution. Hatching chicks were kept in the hatcher to dry out for up to six hours and then moved to a 4' x 4' brooder box on an indoor-outdoor type of carpet, under a 250-watt red heat lamp. No food or water was offered for the first 48 hours and chicks were weighed daily to monitor weight loss in the first 5-6 days. (Problems can develop in chicks that start eating before consuming the yolk nutrient still in their body.) On the third day, chicks were offered crushed ratite pellets, and chopped lettuce and carrots. Water was offered and lettuce was put in the water to encourage the chicks to drink. It is essential that chicks drink to prevent food impaction.

Although chicks have a pecking instinct right after hatching, they do not know what food is. Therefore, it is necessary to teach the first chicks to eat, and they will teach the rest. After 7-8 days, chicks will start putting on weight. Up until a week old, the chicks were offered food 24 hours a day. After a week, food was offered for 8 hours a day only (90g pellets and 90g greens per chick). All food offered and removed was weighed to control and monitor consumption, to ensure optimum growth rates. If chicks were offered too much food, they will outgrow their body-to-leg size, putting too much weight on the legs, which results in crooked or splayed legs. Young chicks should be monitored carefully for growth rate and it

is imperative not to allow too rapid growth. Exercise is also very important at a young age - as much as possible. Chicks were allowed onto a grassed area daily (weather permitting - they were not allowed on rainy days). They were watched carefully since they will eat everything they can swallow including metals, plastics and other potentially dangerous items.

At one week of age the chick was injected with vitamin E and selenium. Chicks were marked with colorful leg bands using Vetrap® bandages. This bandage is flexible and was stretched every day to accommodate the leg growth. At two months old the 20 ostrich chicks were moved to a large exhibit where they were in view of the public.



## Hockey's Florida Panthers to Benefit Endangered Namesake



The Florida Panthers, a new, Fort Lauderdale-based National Hockey League team, is joining with the National Fish and Wildlife Foundation in a hat trick to benefit the team's namesake, the endangered Florida panther (*Felis concolor coryi*).

To start with, Panthers' owner H. Wayne Huizenga is donating \$34,000 to support Florida panther conservation projects. This will be matched by \$16,000 from the Foundation, a non-profit organization dedicated to the conservation of natural resources. Huizenga also will be donating all proceeds from the rental of an educational hockey video to further assist Florida panther recovery efforts. The video will rent for 50 cents at Blockbuster Video stores, and the Foundation has agreed to match 50 percent of these contributions.

Finally, Huizenga has issued an open invitation to the public and corporate sponsors to support his "Panther Saves" program. Each save made by a Panther goaltender during a game will result in a donation to Florida panther projects.

In making the announcement, Acting USFWS Director Richard Smith said, "These measures will raise not only funds but public awareness concerning the current plight of the Florida panther. This venture will serve as an excellent model for other partnerships that combine the resources of a variety of interests - sports, entertainment, business, and conservation."

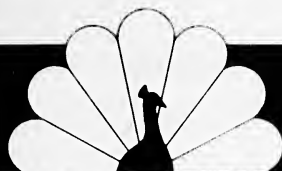
Executive Director of the National Fish and Wildlife Foundation Amos S. Eno added, "It is encouraging to see professional sports, corporate America, and a conservation organization joining hands to bring attention to our rare and endangered species."

Funds raised by the Florida Panthers will support a variety of conservation programs aimed at protecting and acquiring panther habitat, raising public awareness, and improving the species' genetic diversity.

Only 30 to 50 Florida panthers are believed to exist in the wild in swamps and forests of southern Florida. Loss of habitat, environmental contamination, and highway deaths continue to threaten the species.

>News Release Department of the Interior 7/8/93





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# The H.E.L.P. Sanctuary Offers New Life for Pointe Noire Chimps

By  
Paul Aczel, *HELP* Volunteer  
Pointe Noire, Congo and  
former Zoo Keeper at the Cheyenne Mountain Zoo

The day at the H.E.L.P. Sanctuary starts at 6 o'clock in the morning with boiling water for the baby bottles. Three Congolese workers and two white volunteers are preparing food for 39 Chimpanzees (*Pan troglodytes*) and six Mandrills (*Mandrillus sphinx*).

We leave by boats to distribute the food on the three islands. Some of the 'little ones' --16 chimps between the ages of two and four years who live on the first island--are still drinking from bottles. The others get the infant formula in tin cans. The Mandrills, all infants, get milk and rice. Nineteen Chimpanzees, ages three to eight years, live on the second island. They all eat a mixture of formula and rice from cans. The four adults on the third island start the day with a rice and fruit breakfast. At midday everybody gets fruits such as bananas, oranges, or papayas. The evening menu is the same as in the morning. During the day the chimps have the opportunity to complete their diets by eating leaves, bark stems and wild fruits on their own in the forest.

The H.E.L.P. (Habitat Ecologique et Liberte des Primates) project was started in 1989 by Aliette Jamart and Andre Pique, a French couple living in Pointe Noire, Congo, when they took home and began caring for two orphaned baby Chimpanzees. In the beginning they didn't know they had started a project, but it quickly became evident.



H.E.L.P. co-founder Mme. Aliette Jamart shares a moment with Djambo (left) and Zoe (right) when they were still housed in the poor conditions found at the Pointe Noire Zoo. (Photograph courtesy of the International Primate Protection League)

## The H.E.L.P. Sanctuary, *Continued*

As pressure was put on the Congolese authorities to confiscate poached and illegally sold baby Chimpanzees, the couple shared their home with more and more orphans. The chimps arrived on an average of one per month. By the summer of 1991 there were over twenty chimps in Mme. Jamart's rented house, destroying most everything in the garden and in the room where they slept. The landlord gave the couple one month to move out with the chimps. They hastily moved to a previously chosen site; one of three islands in the Coulouati lagoon, 180 kms north of Pointe Noire. A base camp was built on the shore of the lagoon so caretakers could stay on the site permanently.

Aided by human guides who stayed on the island with them all day, the chimps quickly adapted to their new environment. Eventually they all learned to build nests and sleep in the trees, and to search for food on their own. Meantime, more chimps were coming in. The new arrivals were installed on another, smaller island which became the "nursery". Here the newcomers learn basic skills such as climbing trees and interacting with other Chimpanzees.



**Author Paul Aczel and other H.E.L.P. volunteers spend their days on the islands with the chimps getting them used to the requirements of free living such as nest building, food foraging and social interaction.** (Photo courtesy of IPPL)

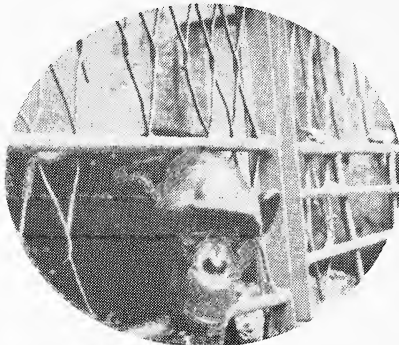
Finally, in December of 1992, the third and last island became occupied. Four adult chimpanzees who had spent most of their lives in miserable conditions at the Pointe Noire Zoo were released onto it. Djambo, an adult male in his early 20's spent 18 years of his life in two 8' x 10' x 10' cages. Two young adult females, Gina and Zoe, spent four years at the Zoo. Peperé, a young male who had just reached adulthood had spent most of his life at the facility. All four were the victims of poaching and the animal trade in the Congo. Mme. Jamart and Mr. Pique have ambitious plans for the future. They are hoping that the protection of the neighboring Coulati Reserve will soon be enforced by anti-poaching patrols. This will allow the opportunity to release the chimps in the mainland forest. The islands could serve as a rehabilitation center for orphaned chimps prior to introducing them to the wild.

H.E.L.P. does not limit its actions to saving only chimpanzees. They take care of and release confiscated monkeys, crocodiles, birds and other animals. They have written several letters to the Congolese government concerning the killing of rare forest elephants in the area. All confiscated gorilla babies that they receive are sent to the Brazzaville Gorilla Orphanage.

## The H.E.L.P. Sanctuary. *Continued*

Mme. Jamart and Mr. Pique built and operate the sanctuary with their own money. They receive only occasional donations from private individuals and organizations. They make the 390 km trip every weekend to take supplies to the sanctuary and to see the chimps. Their dedication and determination to save and protect endangered wildlife in the Congo deserves recognition and help.

H.E.L.P.  
BP 335  
Pointe Noire, Congo  
AFRICA  
FAX: 242-94-40-31



I.P.P.L.  
P.O. Drawer 766  
Summerville, SC  
29484  
USA

Anyone interested in organizing a fundraiser or in sending donations is encouraged to contact H.E.L.P. or the International Primate Protection League (IPPL) at the addresses given below. Please designate donations sent to IPPL for Project H.E.L.P.

## Births & Hatchings



Houston Zoological Gardens (Houston, TX)...announces the following significant B&H from Jan.-June 1993:

**Mammals** - 1.1 Caracal lynx (*Felis caracal damarensis*) [E/CITES I]; 1.2 Gunther's dik-dik (*Madoqua guentheri smithi*) ; 2.0 Spectacled bear (*Tremarctos ornatus*) [CITS I]; 1.2 Dorcas gazelle (*Gazella dorcas*) [E/CITES III]; 2.4 Harris' antelope squirrel (*Ammospermophilus harrisi*) [U]; 1.0 South American tapir (*Tapirus terrestris*) [E]; 1.0 Cape hartebeest (*Alcelaphus buselaphus caama*) [HZG is one of two zoos in North America to have hartebeests; DNS]; 0.0.1 Mexican porcupine (*Coendou mexicanus*) [CITES III].

**Birds** - 0.0.4 Wompoo fruit dove (*Ptilinopus magnificus*) [1st time hatching at HZG and only 2nd hatching in U.S.; parent-reared/3 DNS]; 1.0.2 Sun bittern (*Eurypyga helias*) [U, 2nd generation for HZG]; 1.2 Bali/Rothchild's mynah (*Leucopsar rothschildi*) [E/CITES I]; 0.0.6 Whitebellied go-away bird (*Corythaoides leucogaster*) [5 DNS, only zoo in country breeding these birds]; 0.0.2 Pink-headed turtle dove (*Streptopelia roseogrisea*) [CITES III]; 0.0.4 Magnificent ground pigeon (*Otidiphaps nobilis*) [U, 3 DNS]; 0.0.5 Western grey plantain-eater (*Crinifer piscator*) [CITES III]; 0.0.4 Lady Ross' plantain-eater (*Musophaga rossae*) [U, 2 DNS]; 0.0.3 Violet plantain-eater (*Musophaga violacea*) [CITES III]; 2.0 Stanley crane (*Anthropoides paradisea*) [1st for HZG]; 0.0.3 Plush-crested jay (*Cyanocorax chrysops*) [U, 2 DNS]; 0.0.1 King vulture (*Sarcorhamphus papa*) [CITES III, 1st for unrepresented wild-caught female]; 0.0.4 White-crested turaco (*Tauraco leucolophus*) [U, 2 DNS]; 0.0.3 Collie's magpie jay (*Calocitta formosa collieri*) [U, 2 DNS]; 0.0.1 Common shama thrush (*Copsychus malabaricus*) [1st time hatch, DNS].

**Reptiles** - 0.0.11 Uracoan rattlesnake (*Crotalus vegrandis*) [0.1 is 23 years old]; 0.0.1 Prehensile-tailed skink (*Corucia zebrata*) [CITES II]; 0.0.2 Madagascar tree boa (*Sanzinia madagascariensis*) [CITES I, submitted by Christine Smith, Chapter Liaison, Houston Zoo AAZK Chapter.

# Elephant Set

*(Editor's Note: Beginning with the March issue, this column has contained material on elephant morphology and physiology; nutrition; external diseases including parasites; internal diseases including systemic, gastrointestinal and respiratory; and use of anesthesia. These articles were part of an extensive research manuscript written by Ursula Bechert, DVM of Corvallis, OR.)*



## Anesthesia

*By Dr. Ursula Bechert, DVM  
Corvallis, OR*

Weights are necessary for determining dosages of drugs required for immobilization and anesthesia. Formulas have been developed for the estimation of both body weight and height (Sreekumar and Nirmalen, 1989). Body length (L) in cm from the base of the forehead to the base of the tail and chest girth (G), measured just behind the elbows, are used for obtaining an estimation of body weight (W):

$$W = -1010 + 0.036 (L \times G)$$

Right forefoot circumference (C) at the level of the sole in cm is the parameter for estimating body height (H):

$$H = -1.60 + 1.99 (C)$$

These formulas are applicable to both sexes and species of elephant. "Based on metabolic scaling, smaller elephants would require a higher dose per kg of body weight than larger elephants" (Jacobson, et al. 1988, p. 5).

Drugs commonly used for immobilization of elephants or the maintenance of anesthesia include acepromazine, xylazine and ketamine combinations, etorphine and carfentanil, as well as halothane and isoflurane gases. Both etorphine and carfentanil have been used for maintenance of anesthesia; given either as a continuous intravenous (IV) drip or repeated IV injections (Jacobson, et al. 1986; Jacobson, et al. 1988). Depth of anesthesia is monitored by evidence of arousal (ear flapping, jaw movements, vocalizations), respiratory rates, or cardiovascular changes recorded by ECG tracings and/or blood pressure lines. Anesthesia is usually maintained at a light plane so that a rapid recovery will minimize down time and respiratory compromise.

Heart rates under anesthesia normally range from 47 to 120 beats per minute and respiratory rates range from 4 to 12 breaths per minute (Dunlop, et al. 1985). Direct systolic pressure (taken from an ear artery) will be between 160 and 200 mmHg.

Xylazine stimulates central alpha<sub>2</sub>-adrenoreceptors and can result in bradycardia, respiratory depression and gastrointestinal hypomotility when used alone or in combination with ketamine (Allen, 1986). This makes reversal with either tolazoline or yohimbine desirable. For immobilization, xylazine is given intramuscularly (IM) (0.2 mg/kg of body weight) in combination with ketamine (1-1.5mg/kg IM). Mean induction time is  $14.2 \pm 4.35$  minutes. Jacobson, et al. (1985) recommends 0.15 mg of xylazine/kg in combination with 1.50 mg of ketamine/kg, be given IM. He reports a mean induction time of  $11.6 \pm 6.9$  minutes.

Antagonism with yohimbine ( $0.13 + 0.03$  mg/kg) IV results in a mean standing time of 2.4

## Elephant Set: Anesthesia, *Continued*

+ 1.1 minutes (Jacobson, et al. 1985). Mild ataxia persists for approximately 20 minutes, so during this time elephants should remain isolated from the rest of the group. Reversal with tolazoline (0.5 mg/kg IV) results in a mean standing time of  $2.8 \pm 0.68$  minutes (Allen, 1986).

Etorphine hydrochloride is a common immobilizing drug for many wild species, often used in combination with xylazine or acepromazine. It is a potent synthetic narcotic with approximately 1,000-80,000 times the potency of morphine but has a wide margin of safety in large-sized hoofed stock (Jacobson, et al. 1986). Elephants are extremely sensitive to etorphine, requiring only  $2.19 \pm 0.11$  ug/kg of body weight IM. Mean induction time is  $13.5 \pm 4.47$  minutes. For maintenance of anesthesia, continuous infusion through an IV drip should be given at a minimum dose of 0.8 ug/kg/hr. Multiple IV injections can also be used for anesthetic maintenance, the first dose being required within 28-46 minutes after the initial IM injection. The IV dosing interval decreases with time thereafter.

Diprenorphine hydrochloride is used IV to reverse the effects of etorphine at twice the original dose of etorphine (Heard, et al. 1988).

Halothane can maintain anesthesia using a semi-closed, large animal, circle breathing system with an out-of-circuit halothane vaporizer and a 30 L rebreathing bag (Heard, et al. 1988). Two large animal anesthetic machines connected in parallel can also be used effectively (Dunlop, et al. 1985). Endotracheal tubes ranging in size from 18 to 40 mm internal diameter are required for elephants weighing 250 to 3500 kg. Narrow dental arcades can interfere with oral tube passage (Heard, et al. 1988). In fact, tubes are often much smaller than the laryngeal diameter simply because appropriately sized endotracheal tubes cannot pass through the narrow opening between the molar teeth (Fowler, 1973). In a conscious elephant, 70% of respiration occurs through the trunk and 30% through the mouth. A narrow-bore, high-pressure hose passed up the trunk for oxygen insufflation can also be used. A Hudson demand valve is more efficient than insufflation in maintaining arterial oxygenation; however, with time an increased resistance to respiration may develop with eventual hypoventilation and hypercapnia resulting (Heard, et al. 1986).

Isoflurane has also been used successfully for anesthetic maintenance after etorphine immobilization (Dunlop, et al. 1988). Both halothane and isoflurane gases are usually kept at 2 - 2.5% with an oxygen flow rate of 14-15 L/minute (Tamas and Geiser, 1983).

Carfentanil citrate is an opioid, considered more potent than etorphine. Relative potencies of carfentanil, etorphine and fentanyl are 20:15:1, respectively (Jacobson, et al. 1988). A single IM injection of  $2.1 \pm 0.3$  ug carfentanil/kg body weight results in a mean induction time of  $10.1 \pm 3.7$  minutes. Duration of immobilization ranges from 4 to 187 minutes with a mean of 73 minutes. Maintenance of anesthesia with carfentanil requires a mean dosage of 0.5 ug/kg IV an average of 33 minutes following the initial IM injection. As with etorphine, the time interval between consecutive maintenance doses decreases. Approximately 1.6 ug carfentanil/kg/hr should be given for procedures lasting over an hour.

Several drugs (cyprenorphine, diprenorphine, nalorphine, naloxone, naltrexone and nalmefene) have been used to reverse the effects of carfentanil (Jacobson, et al. 1988). Renarcotization within a few hours of administration can be a problem. Nalmefene, in a ratio to carfentanil of 26:1, appears to be most effective in antagonizing its effects.

In summary, xylazine/ketamine combinations are best used in juvenile elephants due to the large, impractical volumes required for immobilizing adults. Etorphine or carfentanil are more suitable for immobilization of the larger elephants.



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**Editor's Note:** A complete bibliography of the references used in this eight-month-long series may be obtained by sending a stamped (52 cents), self-addressed, business sized envelope along with your request to **AKF Editor, 635 S.W. Gage Blvd., Topeka, KS 66606-2066**.



## **Publications Available**

The following publications are available from St. Lucie Press, 100 E. Linton Blvd., Suite 403B, Delray Beach, FL 33483:

**Big Cypress Swamp and the Ten Thousand Islands** - 137 pgs, 64 color photographs. By Jeff Ripple. Explores the world of cypress swamps, marshes, wet prairies, hardwood hammocks, pinelands, mangrove swamps and the Ten Thousand Islands. Cost \$39.95, plus \$3.95 s/h.

**Poisonous Plants of Eastern North America** - 226 pgs, color. By Randy Westbrooks, USDA, and James Preacher, Emergency Management Division, Army Corps of Engineers. A guide to identifying the poisonous plants of the region-both native and cultivated. Includes 150 species with color photographs, concise plant descriptions, toxicity & symptoms, case histories, folklore, etc. Cost \$29.95 plus \$3.95 s/h.

**Seashore Animals of the Southeast** - 429 pgs, color. By Edward E. Ruppert, Clemson University and Richard S. Fox, Lander College. First comprehensive field guide to animal life along the beaches of the southeastern U.S. Includes 300+ marine animal illustrations, 100 color illustrations, identification, and the biology & ecology of each animal. Cost is \$29.95 plus \$3.95 s/h.



# Chapter News

## San Diego AAZK Chapter

Our Chapter has had a very fun summer. In June the Chapter went on an evening Monorail tour of the Wild Animal Park. Our July meeting was a Photo Safari through the Park for all renewing members. And we topped the summer off with a beach party in August.

Although our general Chapter meetings were devoted to fun, the Board has been hard at work each month with the business of the Chapter. We voted unanimously to give \$500 to National AAZK's Zoo Infant Development Project and \$500 to the Diet Notebook. In addition we voted to give \$500 to the Gordy Foundation, a primate conservation group founded by the San Diego Zoo's Georgette Irvine.

We have also decided to sponsor a keeper from the Hanover Zoo in Germany by paying her membership for AAZK National and the San Diego Chapter.

The last two issues of our Chapter magazine "THE KEEPER" have been well received. Mark de Denus recently wrote us and said, "WOW! The quality and format is superb...I would like to advertise the [magazine] in a LINK Bulletin; some chapters may want to subscribe." Our color magazine is available to all National members or Chapters who wish to join the San Diego Chapter. Dues are \$12 a year. Send dues to SD AAZK Chapter, Attn: Nicki McGahey, c/o San Diego Zoo, P.O. Box 551, San Diego, CA 92112.

*--Christina Simmons, Chapter Liaison*

## Smoky Mountain AAZK Chapter

In the last few months the Smoky Mountain AAZK Chapter has been concentrating on raising money to get the Chapter rolling again. Its first attempt was a bake sale held at the Knoxville Zoo on 5 June. The bake sale

raised \$198.10 and it was decided that \$100 would go into the Knoxville Zoo enrichment fund. This money was to be used for enrichment items for the animals such as beer kegs, bowling balls, Boomer Balls®, sand for digging boxes, and other enrichment items. The rest of the money was to stay in the Chapter fund for future use.

The second fundraiser was a small rummage sale which raised \$88.05 which we plan to use to help send members to conferences.

The Smoky Mountain AAZK Chapter has also been working hard at recruiting new members and determining its goals. Due to the loss of our Secretary, Trish Stroud, we would like to report that our Secretary is now Kim Widner. We would also like to wish the best of luck to Trish at her new job at the Fort Worth Zoo. We know she'll be an excellent addition to their primate department and will be missed in Knoxville.

*--Kim Widner, Secretary*

## Jacksonville Zoo AAZK Chapter

The Jacksonville Zoo AAZK Chapter would like to notify the membership of a change of address for their Chapter. They can now be reached at the following address: Jacksonville Chapter AAZK, P.O. Box 8498, Jacksonville, FL 32239-8498. This Chapter sells the logo bumper stickers with the wording "Zoo Parks/Modern Arks". Orders should be sent to the new address c/o contact person Jennifer Gerez.

## Mesker Park Zoo AAZK Chapter

Due to an emergency mid-year reorganization, the officers for our Chapter are as follows:

President.....Teresa Winiger  
Vie President.....Elizabeth McMurtry  
Treasurer.....GinJr Buente  
Sgt-at-arms.....Jim Evans  
Chapter Liaison.....John Stuteville

We held our annual "Bowling for Rhinos" night on 17 June. Because of a

## Chapter News, *Continued*

last minute schedule change, we only had nine bowlers, but still raised over \$550.00 for the rhinos. We have already set the date for next year's event and anticipate a much better response.

October marks the beginning of the busiest part of our year. The Chapter is busily making preparations for the annual Halloween at the Zoo and Christmas at the Zoo events. These events always prove to be a lot of hard work and raise quite a bit of money for our Chapter--it's a good thing they are also a lot of fun to do! We are also currently trying to select a new logo for our Chapter and send it in to the Logo Registry.

Our Chapter has taken on environmental/behavioral enrichment as a service project for the animals at our zoo. With individuals representing each area of the zoo (our zoo is divided zoogeographically), we are purchasing or producing species-specific enrichment devices. Look for some of our ideas in Enrichment Options!

--Teresa Winiger, President

### Central Florida AAZK Chapter

The Central Florida Chapter AAZK has participated in a number of fun activities this summer. We started off with a sensational "Bowling for Rhinos". This year's event held at Colonial Lanes raised over \$4,000.00. Participants enjoyed a variety of prizes from Spec's Music, the Orlando Cubs, Leopard Imports, Shuckers, The Catfish Place, Sea World, Discovery Island and Old Town Pet Palace.

Discovery Island hosted the June meeting which included a huge spread of food items. Members of the Gainesville Chapter came down for the gala event on "the island". July's meeting at Sea World was another munch fest which included a pinata full of Tootsie Rolls®. Again, members of the Gainesville Chapter road-tripped in for the fiesta.

Keith Atkinson from The Lube Foundation, gave a colorful talk on Bats at the August meeting. This lecture was given at the Central Florida Zoo's

outdoor pavilion. Prior to the talk a birthday celebration was held for the President of the Central Florida chapter, Mike Cothran, and member Chris Swartchick, who recently had a baby boy.

Closing out the summer, the September meeting at Sea World included a tour of the park's newest attraction, Pacific Point Preserve and Manatee's Last Generation. After the tours we attended the new Hotel Clyde & Seamore Show.

Finally, we have set up a state-wide AAZK member camp-out at Silver Springs Wildlife Park. The park will host this event on Sunday, 24 October (camp-out) and Monday, 25 October activities may include camping, canoeing, park tours and a regional meeting. Anyone interested should contact Rick Smith (407) 857-7594 or Mike Cothran (407) 426-8622. See you in Atlanta!

--Rick Smith, RC

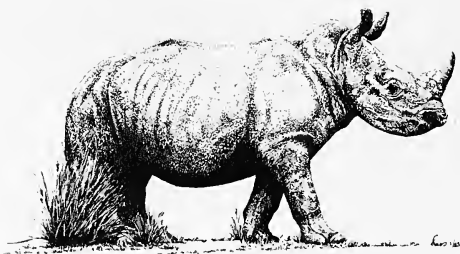


### Kansas City AAZK Chapter

The Kansas City Chapter has adopted a new logo which has also been produced in a cloth patch. The red panda logo reflects their commitment to red panda conservation as well as the tremendous effort put forth by the keeper staff to help complete the spacious new exhibit which was built entirely in-house. Members may wear the patch on zoo uniforms. The logo was designed by our zoo veterinarian, Dr. Kirk Suedmeyer. We are offering these true-color logo patches for sale at \$5.00 each to any interested patch collector.

--Dale Frerking, Chapter Liaison





# Rhino Training

By  
Matthew Edmonds  
Lowry Park Zoo, Tampa, FL

The following is an overview of a project that lasted nine months. I won't attempt to describe every behavior taught to the animal or go into too much detail about training methods.

## Introduction

Working with an animal that weighs 4,500 lbs., and that is as agile as anything on four legs, presents an interesting problem when it comes to management and health care. At the Lowry Park Zoo in Tampa, FL, I worked with such an animal - an Indian rhinoceros (*Rhinoceros unicornis*). Jorhat, or Jordie as he is called, is an extremely impressive animal. He stands just over six feet at the shoulders, and over eleven feet long, with a girth just under twelve feet. As most keepers know, anesthetizing such a large animal can be fatal for the patient. Taking such chances for yearly physicals and to treat injuries seems foolish when the same results can be accomplished without anesthesia and with the animal's permission.

With a small investment in time, and an even smaller monetary investment, a training program can be implemented to teach a rhino to accept routine veterinary care, and keepers' wishes to shift yards. All that is needed to begin the training is a chute (Fig. 1), a target (Fig. 2), and a dog whistle. With three 10-minute training sessions a day, these tools can elevate the level of care a priceless animal receives.

## Training

While an adult Indian rhino has nothing to fear from any animal except man, they still maintain a herbivore mentality. They are always on guard and wary of new things and people. This doesn't alter the training much, but new tasks and new equipment must be introduced slowly, and extra time taken while they become less suspicious of the changes. The type of training I used on Jordie is called target training, which is the same type used on dolphins and whales and is a positive reinforcement-based system. To begin the process, Jordie was taught to touch the target with his nose. When he touched the target, the whistle or bridge was given. The whistle acts to bridge the correct behavior to the reward, a piece of fruit. Once Jordie learned that the whistle meant that he had done something right and he would get a fruit reward, he would remember what he had done and had learned the behavior.

The target could then be used to move Jordie wherever I wanted him. This simple behavior meant that I could shift him anywhere in his enclosure and gave me control over simple management.

New behaviors are taught slowly, but steadily, building on progress already made. The steady introduction of new materials keeps the animal interested and thinking. Perhaps the most difficult new "behavior" to teach was trust. Entering the chute, a very confined space, with me standing there took some getting used to. Over time though, he not only entered the chute, but did so eagerly to start the training session.

Now that he was comfortable in the chute, and with being touched in the chute, his whole body was within each reach to do whatever was needed. This opened the door for drawing blood, administering medications, giving vaccinations, taking body measurements, and

## Rhino Training, *Continued*

making physical observations. All that was left was to get him used to having each one of these procedures done. This was accomplished by slowing desensitizing him to each one.

### Accomplishments

After six months of three, 10-minute sessions a day, Jordie had learned quite a few beneficial behaviors. He will now stand in the chute while his entire body is covered with a skin conditioner. Before, it had to be brushed on with a deck brush that had an extended pole that measured about nine feet. With the pole there were obvious spots that were missed, a hand towel works much better.

Before the training Jordie had never had a blood sample taken and he has been at the zoo over four years. With the training, he calmly stands still in the chute while blood is drawn from the radial vein on the front leg. All this is voluntary and done without anesthesia or local numbing and, if he wishes, he may leave the chute. He would rather stay though and be rewarded with hay and fruit chunks. Regular blood samples have obvious benefits in health care and research.

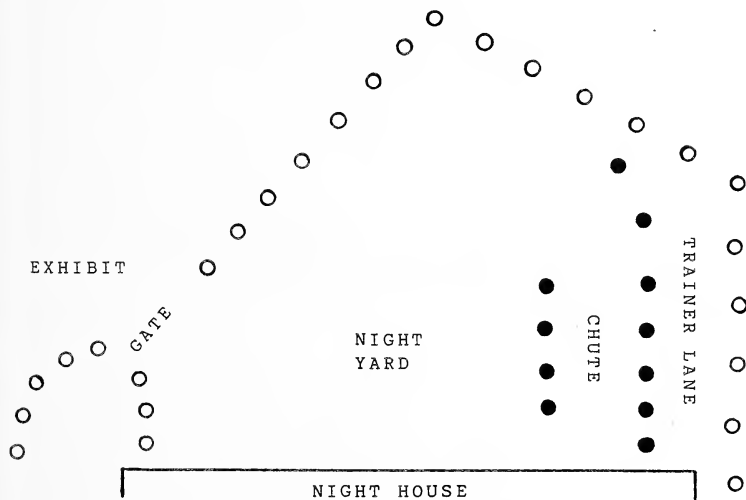


figure 1 ○ = already existing pressure treated poles  
● = pressure treated poles added to create chute

While in the chute Jordie is also available for physical measurements. While he is basically full grown, girth measurements were charted to watch for weight loss or gain. Height and length measurements were also easily obtained.

For medical reasons, the weight of an animal is very important to know. Although Jordie has never been weighed, he had been taught to walk into the chute and step up onto a simulated scale made of thick planks of wood covered by a sheet of 3/4" plywood. Not if it is desired, he can be safely and accurately weighed.

Sterile urine samples can now be collected from Jordie when he is healthy. Before he was comfortable in the chute, urine samples could only be obtained by putting a bag in his nighthouse drain.

In early 1993, one of Jordie's upper incisors erupted in his mouth. With the close daily contact that the training provides, it could be noted on his medical records. Now we know, that with this animal at least, it takes an Indian rhino about ten years to complete dentition.

## Rhino Training, *Continued*

As far as daily health care, the training allows more complete treatment of any minor injury, preventing it from becoming a larger problem. Being sub-tropical, Florida is warm enough for flies to be a concern year-round. With Jordie calmly standing in the chute, small cuts can be kept clean and clear of fly eggs.

### **Enrichment**

One benefit to behavioral training is the mental stimulation it provides an animal. Rhinos can be very difficult to provide with enrichment since they can destroy almost anything. Tree stumps are usually safe, but not much fun.

Within one month of the training program's inception, Jordie was a much more active animal and consequently his appetite also increased. While he still spends much of the day soaking in a mud hole or in his pool, he is definitely more active during the day. Jordie very much looks forward to training sessions, often waiting at the gate that leads to the chute.

On the few occasions that Jordie wasn't paying attention during sessions, all I had to do to regain his attention was leave for five minutes. He would either grind his teeth and pace the exhibit, or grind his teeth and stare at the chute. When I came back I could be assured he would pay attention - training sessions are the highlight of his day.



figure 2

The target is a stick with a 1" diameter and a 2 1/2' length. A white ball is attached on the end.

### **Conclusion**

With fewer and fewer rhinos available to contribute their genes to their species, artificial insemination may play a major role in their future. This would allow a male rhino in an Asian or African zoo to sire a calf in the United States. While semen collection wasn't attempted here, it did seem possible, and is one area that needs to be explored in more depth.

Even without such long-term goals, having better control over management and health care may be enough reason to start such a project.

### **Acknowledgments**

I would like to thank Edmund Gerstein, a Zoological/Behavioral consultant, whose many hours of assistance and numerous ideas and suggestions were vital to the project's success.



# Evaluation of Enrichment Devices for Captive North American River Otters (*Lutra canadensis*)

By  
Gina M. Sequeira  
San Francisco State University  
Department of Psychology  
San Francisco, CA

## Abstract

The behavioral effect from six types of enrichment devices introduced to a pair of captive young adult North American river otters (*Lutra canadensis*) were measured at the Oakland/Knowland Park. Results indicated that the five weeks of enrichment in general did not significantly alter physical activity levels nor the frequencies of solitary, affiliative, aggressive and submissive interactions from baseline. The major hypothesis that activity levels would change in response to certain preferred devices was supported only during Week 3 when aggressive/submissive levels significantly decreased upon the provision of tubes stuffed with frozen fish. The otters displayed selective preferences for certain toys, and their patterns of physical interaction varied for each weekly device such that their interest levels either decreased, increased or remained minimal and stable. In addition to providing some novelty and entertainment for captive otters, there was a significant decrease in public-directed behaviors during the course of enrichment.

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Otters have the popular reputation of being lifetime habitual players, which is rare among adult animals (Beckel, 1991), and they carry a high exhibit value in zoos and aquariums. Maxwell (1960) stated that wild adult otters will play alone for hours, gripping and tossing any convenient floating object in the water, and in captivity he has amused them with ping-pong balls, marbles, rubber fruit and terrapin shells. However, Melquist & Hornocker (1983) have reported that wild otters play significantly less than those in captivity. Included among the types of play common among river otters are object manipulation like dropping small stones only to retrieve them an instant later, play wrestling, underwater acrobatics, and snow or mud bank sliding.

The present study was developed with the primary goal to evaluate the effectiveness of several enrichment devices proposed by the zoo staff, in terms of recording the number of interactions with new objects and comparing the frequencies of naturalistic behaviors between baseline levels and during environmental manipulation. Another area of inquiry was to investigate whether some combination of new devices or toys would produce greater levels of activity when compared to introducing an enrichment device separately. These results altogether could be beneficial in identifying the general types of enrichment devices that work better than other for *Lutra canadensis* and other related species, in terms of cost, practicality, safety, and most importantly, enjoyment for a nomadic species that requires a high degree of activity and exercise in order to thrive and remain healthy in a captive environment. In regards to the interactions with new enrichment toys, it was expected that certain devices would immediately be rejected upon presentation possibly because they held some properties that were not instinctually attractive, while other apparatuses would emit greater interest levels that were longer in duration.

## Results

The small population sample consisted of two captive adult North American river otters, Ozzie and Harriet, housed at the Oakland Zoo/Knowland Park. Apart from the normal enrichment toys (steel croquet-sized balls, pie tins, 2 small wide tubes and 1 small bottle made of hard plastic), some of which remained in the exhibit 88% of the time throughout the study, the following new types of enrichment devices from Figure 1 were introduced to the otters for a week at a time, except the tunnel which remained in the pool for two weeks.

## TYPES OF ENRICHMENT FOR OZZIE AND HARRIET

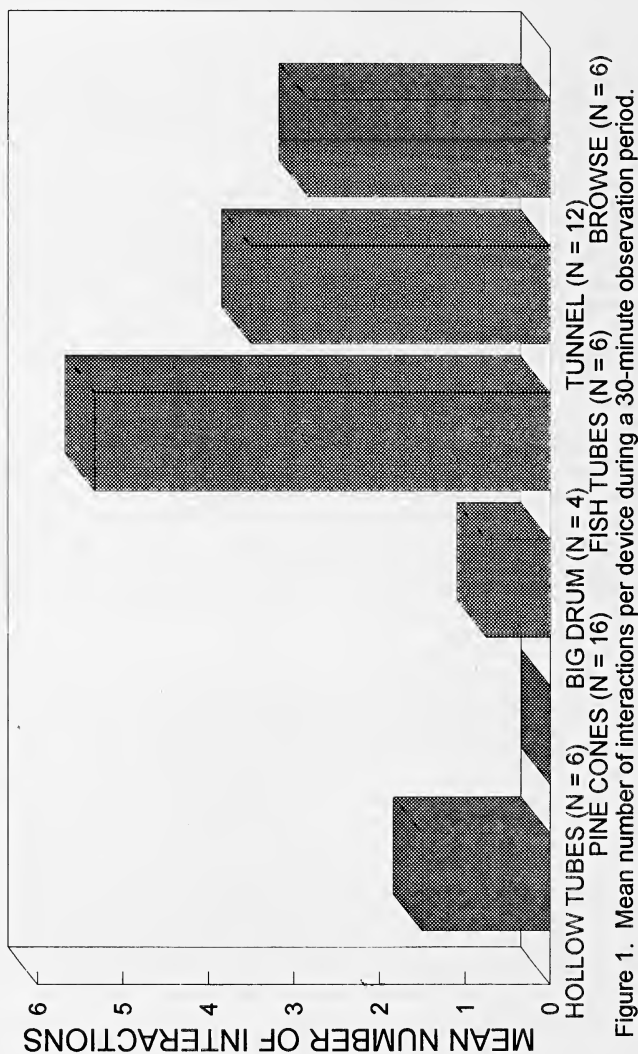


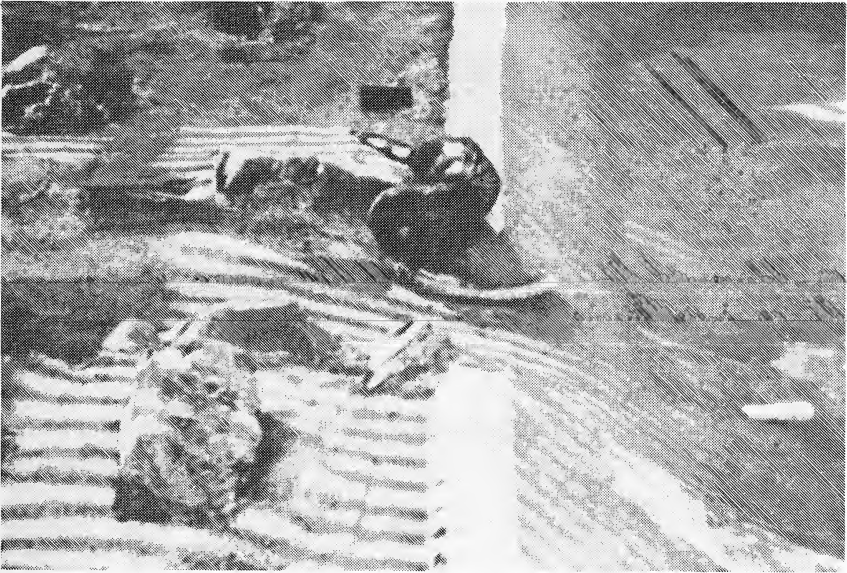
Figure 1. Mean number of interactions per device during a 30-minute observation period.

\* Results from paired t-tests comparing the fish tubes with each device revealed that only the interactions between the fish tubes and pine cones, and between the fish tubes and big drum were significantly different at  $p < .05$ .



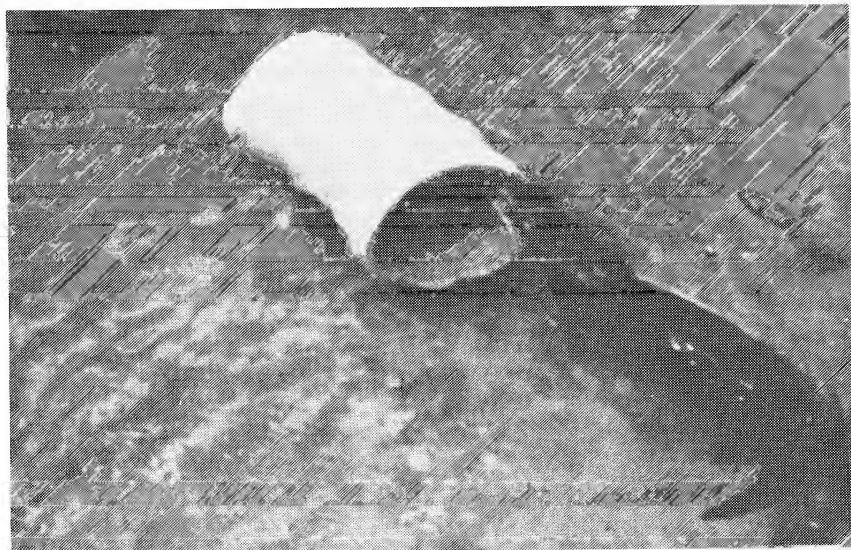
## Evaluation of Enrichment Devices for N.A. River Otters. *Continued*

The general results from the different enrichment devices revealed that the otters showed selective preferences for some toys, ranging from close to no interest in playing with the imitation pine cones to the greatest interest in the fish tube device which contained food and required some work and skill in obtaining fish through the small ends of the skinny tubes. During Phase 1 (Week 1), the mean number of plays with the hollow tube was only 1.50 times per 30-minutes, and the otters did not play with the pine cones at all during this time. Even during the later weeks when the keepers occasionally tossed in a couple of cones in the afternoon, the otters only touched them once in 30 min. The big drum apparently did not generate much interest and the otters barely nuzzled it during Week 2 (mean = 0.75 interactions per 30-minutes). Interactions with the fish tubes during Week 3 were much better than among the former devices, and the otters investigated and foraged for food in them at an average of 5.33 times per 30 minutes. The mean number of fish tube interactions per 30 minutes was individually compared against the mean of each enrichment apparatus. Results from paired t-tests indicated that the otters only showed a significant selective preference for the fish tubes when compared to the pine cones,  $t(41) = 2.09$ ,  $p < .05$ , and when compared to the big drum,  $t(41) = 1.98$ ,  $p < .05$ .



**Harriet skillfully dug the frozen fish out from the tube.** (Photo by the author)

The mean number of tunnel use during 30 minutes for *Figure 1* was averaged across Phases 4 and 5, when the tunnel was introduced by itself and when it accompanied the browse the following week, respectively. When the tunnel was presented during the first week, the average number of interactions during a half-hour session was only 1.67, but during the following week, the otters appeared to become more comfortable with the new piece of furniture and interacted with it on the average of 5.33 times per session, but this increase in the mean levels of interaction during the following week was not significant,  $t(6) = -1.50$ ,  $p > .05$ .



**Harriet Approached the white tunnel.** (*Photo by the author*)

### Physical Activity Levels

The most prominent activities observed baseline were: first, solitary watching (mean = 7.79 per 30 minutes); second, solitary swimming (mean = 5.93); and last, solitary grooming (mean = 5.29). During enrichment, swimming was the top activity (mean = 8.29), followed by solitary watching (mean = 4.96), and then solitary searching for scent or night house access (mean = 3.70).

There were no general significant differences in the amounts of affiliative, aggressive, submissive, and solitary behaviors per 30 minutes when baseline levels were compared to overall enrichment (affiliative,  $t(440) = 0.40$ ,  $p > .05$ ; aggressive,  $t(4) = 0.97$ ,  $p > .05$ ; submissive,  $t(40) = 1.22$ ,  $p > .05$ ; solitary,  $t(40) = 0.13$ ,  $p > .05$ ). Throughout the study, instances of aggression were found to positively correlate with the amount of submissive gestures observed, at  $r + 0.38$  ( $n = 42$ ),  $p > .05$ . Although this correlation was relatively low in that only 14% of the variance of aggression and vice-versa, it is nonetheless noteworthy to find that the aggressive-submissive paradigm so apparent between animals in the wild could be observed from just one pair of river otters under the restraints of captivity.

Unfortunately, there was not a significant overall effect of introducing enrichment in changing the otters' physical activity levels ( $F 1, 41 = 0.57$ ,  $p > .05$ , *n.s.*), despite the slight elevations and reductions of the majority of behaviors which were for the most part solitary. Physical activity was defined and measured by the composite mean frequency of the following variables: avoidance by moving away from the social partner, chasing, climbing, playing with old toys, following, foraging, grooming, mating, scent-marking, sniffing at the trap doors, bipedal standing, swimming, and wrestling. During a typical half-hour, the mean baseline physical activity level per otter was 28.93 behaviors, and during overall enrichment averages across Phases 1 through 5 at 25.68 behaviors, and this difference was not significant,  $t(40) = 1.16$ ,  $p > .05$ .

During the five weeks of introducing new enrichment devices, the number of behaviors directed toward the public, standing bipedally and watching (mean per 30 minutes = 6.75), significantly decreased from that of baseline (mean per 30 minutes = 10.43), at  $F 1, 40 = 4/93$ ,  $p < .05$ .

## Evaluation of Enrichment Devices for N.A. River Otters, *Continued*

### Discussion

In summary, the five weeks of enrichment altogether did not significantly alter the levels of affiliative, aggressive, submissive, and most importantly solitary activity when compared to prior baseline levels. Physical activity, as measured by certain species-typical behaviors that required a relative amount of bodily movement, also did not change with overall enrichment. The introduction of fish tubes during Phase 3 appeared to promote the most interest, and aggressive and submissive activities significantly decreased from baseline measures, which supported the main hypothesis that the otters would show some significant changes in their activity levels with the introduction of certain enrichment devices. However, there may be a good possibility that the drop in aggressive-submissive interactions could as well be due to temperament fluctuations during the mating season since this study was conducted from later winter to early spring.

That the otters displayed selective preferences among the enrichment devices based on their instinctually attractive properties was significantly supported upon the immediate rejection of the pine cones and big drum, and the greatest mean number of interactions with the tubes carrying frozen fish. Artificial enrichment devices, in this case small tubes of fish which make use of food as reinforcement, worked better to activate and promote instinctual persistence or sustained interaction with an object than those other simple artificial devices lacking reinforcement (hollow tubes, pine cones, browse). Although the otters appeared to utilize the tunnel more frequently with time, the nonsignificant increase in tunnel usage did not statistically support the last prediction that certain apparatuses would induce greater interest levels that were longer in duration. Perhaps with the larger, more permanent apparatuses, animals need more time to become accustomed to them for play, while the smaller, less threatening enrichment devices like the pine cones, tubes and browse can be immediately investigated and disregarded after a short while when curiosity becomes satisfied.

In planning for various types of enrichment for certain species, it is helpful to consider each individual animal's personality and most readily observed behaviors if known beforehand. These personality differences were evident from Ozzie and Harriet's typical individual behaviors and from their different interest levels in playing with the tunnel and browse. Besides the fact that providing the enrichment toys helped to create some sense of novelty and unpredictability for active otters in an otherwise static captive environment, the five weeks of enrichment overall may have been an important contributing factor to the significant decrease in the number of behaviors directed towards the public (e.g standing and watching), which left more time for the otters to engage on other species-typical behaviors between themselves.

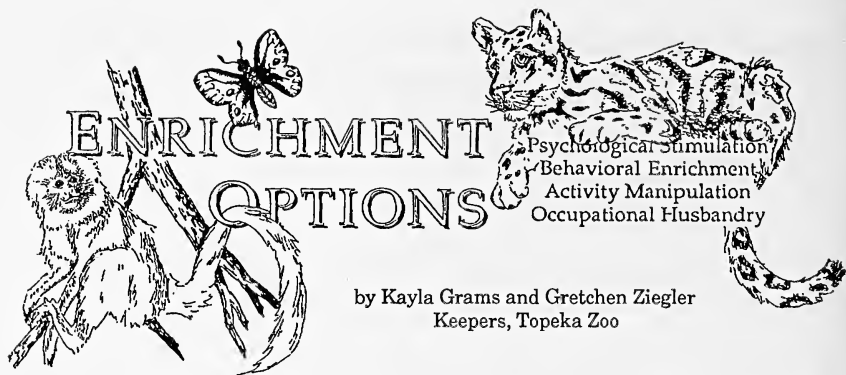
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Melquist, W.E. and Hornocker, M.G. (1983). *Ecology of river otters in Idaho*. Wildl. Monogr., 83, 1-60.



## Information Please

An animal keeper at the Mt. Kenya Animal Orphanage in Nanyuki, Kenya would like information on husbandry of cheetahs, specifically care taking protocols used with new cubs, diet changes for pregnant females, veterinary care, etc. The orphanage has had successful births in the past, but all cubs have died within six months. Any information would be helpful. Please send information to: David Powell, Department of Zoology, University of Maryland, College Park, MD 20742-4415.



**PROSIMIANS** - (Bushbabies, Lorises, Lemurs). Attach a rope or cord to a large lag eye screw and secure screw into the base of an ear of corn. Suspend the corn by the rope from a high branch or the enclosure's ceiling/cage roofing. Make sure the corn is just out of reach from the ground and sides but close enough for the animals to climb or jump onto it. Interesting techniques develop as the animals try to retrieve the reward. The corn may be husked or unhusked, depending on the individual's preference or may be substituted entirely for another type of solid food item which can be secured with the eye screw.

-- John H. Drake, Primate Technician I  
Duke University Primate Center, Durham, NC

**APES** - Our apes enjoy strips of fire hose cut to varying lengths. These are used in various ways. We have seen them used as borders around nests, objects to display with, adornments on the body, and fishing tools. We sometimes scatter small food items on our service area floors so the apes may 'fish' for them with the pieces of fire hose, which fit through the gap under our cage doors.

This led us to the idea of a 'tug of war' when animals are confined inside. A long piece of fire hose is knotted in the middle so the knot won't fit beneath the doors. The ends of the hose are placed in facing cages, with the knot in the service area between the cages. We have never seen a prolonged period of direct pulling, as in tug of war, but some of the apes seem to enjoy interacting by alternately yanking the hose back and forth. We've seen some interesting cross species interactions as our chimps, oranges and gorillas are housed in the same building. Of course, this would not be feasible if there is concern about disease transmission. Keepers must be alert as the apes are not above yanking an unsuspecting human off their feet if they are foolish enough to stand on the hose.

-- Ann Rademacher, Great Ape Keeper  
Little Rock Zoo, Little Rock, AR

**CATS** - (Cougars) Place a few live fish in their pool or in a large watering trough and watch them do a little fishing. They may not completely eat the fish immediately but ours finished theirs off by the next morning, leaving very little clean up. Another toy we have found for these cats is miniature squash (or any small melon). They like to bat it around like a house kitten would.

**CONDORS** - Place a fish in some water in a rubber bowl and freeze it overnight. Place the fish block into the condor enclosure and watch it peck through the ice. Or place a mouse inside a Kong toy and watch the condor manipulate the Kong toy to retrieve the mouse and then continue to manipulate the toy, for a long period of time. This is not only stimulating for the animals but exciting for the public.

-- Kimberly Widner, Conservation Research Asst.  
Knoxville Zoo, Knoxville, TN





# Book Review

## *Great Cats: Majestic Creatures of the Wild*

Consulting Editors: Dr. John Seidensticker and Dr. Susan Lumpkin  
1991 Rodale Press, Book Reader Service, 33 East Minor St., Emmaus, PA 18098  
Hardback. 240 pgs. \$40.00

*Review By Julie Abraham  
President AAZK/EFBC Chapter  
Special Events Coordinator  
Exotic Feline Breeding Center  
Rosamond, CA*

I am pleased to recommend Great Cats to Zoo Educators and Keepers alike. It is a general reference of exceptional quality. The information is both scientific and anecdotal, covering a broad variety of disciplines.

The book is divided into three main sections containing chapters written by specified contributors: Evolution and Biology (54 pages), Cats Up Close (90 pages) and Cats and Humans (38 pages).

The list of nearly forty contributors is impressive. It includes members of the IUCN Cat Specialist Group in Switzerland, free-lance photographers and writers, species specialists and conservationists from Tanzania, Great Britain, India, Nepal and the U.S. The Contributing Editors have tapped and distilled an extensive reservoir of knowledge. As a further indication of the calibre of this book, data is presented in context, i.e. guidance is given as to whether the information is standard, unavailable or controversial.

Over 200 illustrations and photographs make Great Cats a visual delight. A pictorial section includes all 37 modern species, each with a map of geographic distribution and a convenient summary of known information. (These portraits lack the very vibrant colors of living felines, yet are executed to a high standard and are very well presented). Elsewhere, artists' impressions recreate scenes to capture the imagination and illustrate the text.

The photographs are consistently superb. Coverage given to the lesser known species is especially welcome. (Sub-species are not portrayed but the material touches upon range and variation in appearance.)

One of the strongest features of the book is that a substantial body of information is presented very accessibly. Each section is highly organized, being broken down into chapters, themes and related topics. A detailed index is also provided.

As an illustration, section two ('Cats Up Close'), is a series of chapters on individual species. Themes include hunting behavior, how young are reared, habitat, territory and mating. The topics, presented against a distinct color background, cover for example: tiger densities in reserves ranging from Nepal to the USSR [sic], kin selection in lions, abnormalities in male sex cells due to inbreeding, difficulties of establishing reliable wild population estimates, radiotelemetry studies, the efficacy of CITES on curbing trade in jaguar skins and the genetic crisis of the cheetah. Tables, photographs and illustrations add to the clarity.

Section One, Evolution and Biology, surveys the broad relationship between modern felidae and both modern and extinct members of carnivora. It attempts to define 'true cats' while summarizing common misconceptions and areas still under research. Topics include the role of cats in communities of prey (in the presence of other carnivores); how the field of molecular evolution has helped resolve controversies (through the study of changes in DNA sequences) and a summary of five other evolutionary hypotheses and the relative support they attract.

## Book Reviews, *Continued*

Section Three, 'Cats and Humans', covers the practical implications of our species' interaction with felids: the powerful visual meaning of felines in Western and Asian art; religious symbolism and legend; the myth and reality of man-eaters; their use in folk medicine and as hunting companions. An important inclusion is a "how and where" of recent advances in artificial reproduction. The art and photographs chosen to represent this section are particularly evocative.

Great Cats is a 'must read' for anyone seriously interested in felines and is a powerful educational tool.

### Wild Cat Species of the World

By Richard Green, 1991

Basset Publications, 60 North Hill,

Plymouth, S. Devon PL4 8HF England

163 pgs. 26 Photographs/Paperback £12.50

*Review by Stuart Allen Wells*

*Biological Technician*

*Department of Mammals*

*National Zoo, Washington, DC*

Wild Cat Species of the World recognizes thirty-seven species of wild cat and includes a description of the domestic cat as well as a description of the little known and unclassified "Onza", a wild cat which is confined to the Sierra Madre Occidentale mountain range in Mexico.

The author includes a brief description of cats in general at the start of the book. This description includes the skeletal makeup, dentition, some general behavioral descriptions, and a short explanation of the morphological differences between large and small cats. In this introduction the author states that he will be using the cat classification system described by Hemmer in 1978.

The descriptive text for each cat is general but fairly complete. The format which is followed throughout the book is to state the common name with the genus species printed just underneath. This is followed by the vital statistics which includes the length, height, weight, age of maturity, dentition, chromosome count, karyotype, longevity, gestation, average offspring, and birth weight for each cat. In several cats some of the above information is omitted. I suspect that this was due to a lack of available information. The block of vital statistics is followed by paragraphs of general description, distribution and habitat, habits, breeding and development, status and systematics.

The descriptive portion of each cat is general but useful, because it does include known color variations and goes into morphology briefly. The description section also includes hunting styles and the specific adaptations that each cat has developed for effective prey capture.

The information provided in the distribution and habitat portion of the text is also general but seems to be fairly current for each cat. In some cases little is known about the habitat and distribution of the smaller wild cat species. The author does not state this but it becomes obvious by the lack of information provided.

The habits of each species described includes social structure, hunting habits, and behavior toward other species including man, when that is known. In a few cases, distribution and habitat were combined with habits. I believe this was done because of lack of information in either category.

Breeding and development contained a great deal of information. The time of year for breeding, number of estrous cycles per year if known, and breeding behavior were listed. Development of young included growth weights whenever possible, milk composition, age of weaning, as well as appearance during development. Overall this section seemed to be the most well developed throughout the book.

The status of each cat and the systematics was the final area of discussion for each cat species reviewed. In this section the known information about the wild classification of each species was listed as well as the recognized number of subspecies. The author also

## Book Reviews, *Continued*

includes the International Species Indexing number for each cat subspecies and where they are located geographically.

Overall, I feel that Wild Cat Species of the World handles the momentous task of providing a useful quick reference to the wild cats very well. The author's method of providing as much general information as possible is helpful in getting a feel for the animal and the photograph section of the book helps as well. However, the author does not provide a photograph of each wild cat species which is discussed in the book.

I would not consider this work to be useful as a scientific manual on wild cat specifications, however for the layman and for interested naturalists, I would recommend this book as a useful addition to their wild cat reference library.

### Macmillan Animal Encyclopedia for Children

By Roger Few

Macmillan Publishing Co., 1991

866 Third Avenue, NY, NY 10022

120 pgs. Hardback \$16.95

*Review by Alycin Hayes, Student*

*Santa Fe Teaching Zoo, Gainesville, FL*

The Macmillan Animal Encyclopedia for Children presents the world of animals not by species nor geographically, but by habitat. The introduction explains how nature divides the planet into areas of climatic habitats; and, how the many animals in each habitat are adapted to live in their environment and with each other. The book is divided into nine main categories. First are the "Ice Caps and Tundra". A world map indicates exactly where these habitats are located. This is augmented with colorful climatic maps of rainfall and temperature. There are photographs as well as hand-painted illustrations to show young readers what kinds of animals live in ice caps and tundra. The chapter begins with a written description of the habitat and is followed by brief individual descriptions of some of the mammals, amphibians, reptiles and birds that are well-adapted to live there. The factual information includes where the animal is found, its size, scientific name, feeding habits and a unique characteristic such as: "The golden plover leaves its tundra breeding grounds and flies some 8,000 miles to the warmth of South America."

Within each chapter one specific habitat is looked at in more detail with descriptions and illustrations of the terrain and animals of that particular habitat. In the first chapter, the Siberian tundra is chosen. The book continues with the chapters: "Coniferous Forests"; "Woodlands"; "Grasslands"; "Deserts"; "Tropical Forests"; "Mountains"; "Rivers and Lakes"; and, "Oceans". The specifically detailed areas in these chapters include the Canadian coniferous forest, Australian eucalyptus woodland, East African savanna, the American Southwest, Amazon rainforest, Himalayas, European river and the Pacific deep sea. A brief glossary of words such as: amphibian, migration, species, etc., completes the book. A more comprehensive index follows. The illustrations and photographs are done by a team of talented artists. These pictures are delightfully spaced so as to keep the interest of young children.

I was disappointed though to find a few mistakes in the captions. For example, there is a beautiful photograph of an elk which is described as a Canadian moose! The lynx of Europe, northern Asia and North America is called *Felix lynx* instead of *Felis lynx*. These are not major flaws in an otherwise very attractive and environmentally conscious encyclopedia for children; but, an encyclopedia should be accurate and hopefully these mistakes will be corrected in future editions of this lovely book.



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# The Return of the Wolf

## Debate on Yellowstone Reintroduction Continues

For 60 years, the resonant howl of the Gray wolf (*Canis lupus*) has been absent from the Yellowstone National Park ecosystem. Nearly exterminated by settlers and government predator eradication policy, the wolf had virtually disappeared from its natural range in the lower 48 States by the 1930s. Since 1973, when the Gray wolf was placed on the Endangered Species List, bureaucracy and inaction have further threatened its existence. By law under the Endangered Species Act, the U.S. Fish and Wildlife Service must enact plans for the recovery of species like the wolf, which is endangered throughout its historic range, except in Alaska and in Minnesota.

### Pro-Wolf Proposal

After 20 years of inaction, the USFWS has released a draft environmental impact statement (EIS) proposing experimental wolf reintroduction within Yellowstone National Park. The draft includes five options, drawing on public input from written testimony and from six public hearings held last August. More than 1400 people attended the hearings and 435 individuals testified with 80 percent in favor of returning wolves to their natural territory in Yellowstone.

Yellowstone, the world's first national park, lacks only one native species -- the wolf. Within the boundaries of the park, experimentation with wolf reintroduction can take place while restoring the Yellowstone ecosystem to its natural balance. The USFWS's preferred alternative calls for managing an experimental nonessential population of wolves. The experimental "nonessential" designation provides an alternative to passive--and uncertain--natural recovery and means that wolves will be actively and purposefully introduced and managed. Under this plan, up to 15 wolves, including breeding adults and their pups, could be released in Yellowstone by the late fall of 1994.



*Gray Wolf*  
(*Canis lupus*)

"This plan is good for wolves, good for Yellowstone, and good for people" says Tom Doherty of the National Wildlife Federation's (NWF) Rocky Mountain Natural Resource Center. "It addresses the concerns of local residents, provides needed management flexibility, and, in this year of reauthorization of the Endangered Species Act, clearly demonstrates that the Act is an effective conservation tool to balance the needs of wildlife and people."

Doherty, the NWF's Western Division State Director, and his team completed a technical review of the EIS and developed the following proposals to strengthen the final plans and secure reintroduction of wolves to Yellowstone:

- Plans for the reintroduction of an experimental nonessential population of wolves to Yellowstone should be implemented immediately. Wolf opponents have created 20 years of delays. Now is the time for citizen participation to secure government action to reestablish a healthy wolf population.

## The Return of the Wolf, *Continued*

- All wolves lost by human intervention should be replaced by reintroduction rather than by natural reproduction. Replacement should occur within one calendar year.
- Proposed plans for cooperative management with the states of Wyoming, Idaho, and Montana should require the states to secure USFWS approval and public input on written management plans. These plans must be legally consistent with the Endangered Species Act.

### Public Hearings

The U.S. Fish and Wildlife Service held a series of public hearings on the draft EIS in August and September to gather input and finalize plans for the wolf in Yellowstone. The public is invited to make comments on the proposed wolf reintroduction plans and the draft EIS. Such comments should be sent by 15 October to: Gray Wolf EIS, P.O. Box 8017, Helena, MT 59601.

>by M. Katherine Heinrich, from *EnviroAction*, National Wildlife Federation, September 1993

### Wolf Facts



- Wolves prefer wild prey to livestock. In Minnesota, Alberta, and British Columbia, where ranches operate near wolf populations, the highest losses of livestock to wolf predation have not exceeded 0.16 percent in cattle and 0.31 percent of sheep per year.
- A private fund, supported by conservationists, exists to reimburse ranchers for livestock verified lost to predation by wolves.
- Wolves instinctively avoid contact with humans. Not a single instance of a healthy wild wolf seriously injuring or killing a human has ever been recorded in North America.
- Wolves will restore balance to the natural prey-predator relationship in the Yellowstone ecosystem, encouraging swift and strong populations of deer, elk and bison, and equilibrium in the food supply.

Jim Dutcher's latest wildlife film, *Wolf: Return of a Legend*, will air on ABC television on Sunday, October 24th at 7 p.m. Eastern Standard Time. Consult your local listings for exact time and channel in your area.



# L.I.N.K.

## (Liaison and Information Network for Keepers)

Coordinator for the LINK System: Mark de Denus, Assiniboine Park Zoo, 2355 Corydon Ave., Winnipeg, Manitoba, Canada R3P 0R5. (204) 986-6921 [w]; (204) 837-2916 [h]

### Regional Coordinators

- ALABAMA** - Fred Alvey, Zoo Atlanta, 800 Cherokee Ave. S.E., Atlanta, GA 30315  
**ALASKA** - Vacancy  
**ARIZONA** - Bruce Eneboe, Reid Park Zoo, 1100 S. Randolph Way, Tucson, AZ 85716  
**ARKANSAS** - Debbie Jackson or Ann Rademacher, Little Rock Zoological Gardens, #1 Jonesboro Dr., Little Rock, AR 72205  
**CALIFORNIA (Northern)** - Jean Lai, Oakland Zoo, 9777 Golf Links Rd., Oakland, CA 94605 and Ruby Lara, Sacramento Zoo, 3930 West Land Park Dr., Sacramento, CA 95822-1123  
**CALIFORNIA (Southern)** - Johnny Merk, EFBC, HCR #1, Box 84, Rosamond, CA 93560  
**COLORADO** - Suzanne Chacon-Brennan, Denver Zoo, City Park, Denver, CO 80205  
**CONNECTICUT** - Jeanette Nadeau, Roger Williams Park Zoo, Providence, RI 02905  
**DELEWARE** - Theresa Maas, Philadelphia Zoo, 34th & Girard Ave., Philadelphia, PA 19104  
**FLORIDA** - Rick Smith, 5752 Stoneridge, Orlando, FL 32839  
**GEORGIA** - Fred Alvey, Zoo Atlanta, 800 Cherokee Ave. S.E., Atlanta, GA 30315  
**HAWAII** - Vacancy  
**IDAHO** - Vacancy  
**ILLINOIS** - Pat Swieca, 5710 W. Cullom Ave., Chicago, IL 60634  
**INDIANA** - Vacancy  
**IOWA** - Carla Wieser, Omaha's Henry Doorly Zoo, 10th St. & Deer Park Blvd., Omaha, NE 68107  
**KANSAS** - Vacancy  
**KENTUCKY** - Scott Wright, Cleveland Metroparks Zoo, 3900 Brookside Park Dr., Cleveland, OH 44109  
**LOUISIANA** - Vacancy  
**MAINE** - Jeanette Nadeau (see addresses under CT)  
**MARYLAND** - Theresa Maas, Philadelphia Zoo, 34th & Girard Ave., Philadelphia, PA  
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**NORTH CAROLINA** - Lucy Segerson, North Carolina Zoo, Rt. 4, Box 83, Asheboro, NC 27203  
**NORTH DAKOTA** - Bob Debets, Assiniboine Park Zoo, 2355 Corydon Ave., Winnipeg, Manitoba Canada R3P 0R5 (204) 986-4040 [w]  
**OHIO** - Scott Wright, Cleveland Metroparks Zoo, 3900 Brookside Park Dr., Cleveland, OH 44109  
**OKLAHOMA** - Debbie Jackson or Ann Rademacher (see addresses under AR)  
**OREGON** - Anna Michel, Washington Park Zoo, 4001 SW Canyon Rd., Portland, OR 97221  
**PENNSYLVANIA** - Theresa Maas, Philadelphia Zoo, 3400 W. Girard, Philadelphia, PA 19104  
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**SOUTH DAKOTA** - Bob Debets (see address under ND)  
**TENNESSEE** - Gail Karr or Cindy Pinger, Memphis Zoo & Aquarium, 2000 Galloway, Memphis, TN 38112  
**TEXAS** - Ann Marie Greco, 5903 Danny Kaye #2104, San Antonio, TX 78240  
**UTAH** - Suzanne Chacon-Brennan, Denver Zoo, City Park, Denver, CO 80205  
**VERMONT** - Jeanette Nadeau (see addresses under CT)  
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**WASHINGTON** - Elandra Aum, Woodland Park Zoo, 5500 Phinney Ave. N, Seattle, WA 98103  
**WEST VIRGINIA** - Theresa Maas, Philadelphia Zoo, 34th & Girard, Philadelphia, PA 19104  
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**WYOMING** - Vacancy  
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*Institutions wishing to advertise employment opportunities are asked to send pertinent data by the 15th of each month to: Opportunity Knocks/AKE, 635 Gage Blvd., Topeka, KS 66606. Please include closing dates for positions available. There is no charge for this service and phone-in listings of positions which become available close to deadline are accepted. Our phone is 1-800-242-4519 (U.S.); 1-800-468-1966 (Canada). Our FAX is 913-273-1980.*

**ZOOKEEPER**...accepting resumes for full-time Keeper positions, BIRD (psittacines, cranes, waterfowl) and MAMMAL (ungulates, primates, cougars, cheetahs). Degree or equivalent zoo related experience. Daily duties include care, feeding, habitat upkeep, breeding programs, record keeping, medical coordination, training, acquisitions, etc. Must be willing to work weekends/holidays. Starting salary \$15,000-\$20,000 with year-end bonus and benefits. Excellent growth potential. Salary commensurate with experience. Send resume/references to: Washington Zoological Park, 19525 SE 54th, Issaquah, WA 98027. **Positions open until filled.**

**BIRD KEEPER**...requires experience working with captive exotic birds. Responsibilities include the care, feeding and cleaning of an extensive collection geared towards the breeding of rare species. Warm outdoor Florida working environment in a private breeding facility closed to the public. Looking for that special someone for long-term employment. Salary commensurate with experience. Send resume to: Dr. Richard L. Miller, 5700 S.W. 130 Avenue, Fort Lauderdale, FL 33330. Phone: (305) 434-8599 FAX: (305) 434-4889.

**CURATOR OF MAMMALS**...requires Bachelor's degree in animal sciences and a minimum of two years supervisory/curatorial experience in the management of a zoological institution mammal collection. Responsibilities include acquisition, maintenance and care of a major mammal collection. Must have proven management skill and excellent written/oral communication skills. Starting salary \$35,000 with benefits. Submit resume **by 29 October 1993** to: Nancy Foley, Director of Human Resources, P.O. Box 4010, Toledo, OH 43609.

**DIRECTOR OF ZOOLOGICAL SERVICES (City of New Bedford, MA)**... requires higher education in business administration, zoology or related field or combination of equivalent education/experience. Proven knowledge and practical experience in educational programs, federal funding. Supervise zoo staff, including handling union relations and affirmative action. Work with researchers, public organizations, recruit/work with volunteers. Assist in budget and procurement management. Will work under the Director of Parks and Recreation for administration of Zoological Services and welfare of animals therein. Will supervise directly or through subordinates all employees and volunteers on the Zoo staff. New Bedford has a residency requirement. For application or complete job description contact: Personnel Department, City of New Bedford, 133 William St., Room 14, New Bedford, MA 02740. EOE.

**BAT KEEPER**...the Lube Foundation is currently accepting applications for one full time animal keeper in their bat department. Duties include, but are not limited to: feeding, cleaning, medicating, manipulating, and daily record upkeep of one of the largest Flying Fox collections in North America. Must have had at least one year exotic animal experience. Pay scale is \$6-\$8 per hour. Please direct all inquiries and resumes with references to: Keith Atkinson, Curator, Bat Department, The Lube Foundation, Inc., 18401 Northwest County Road 231, Gainesville, FL 32609. Vox (904) 485-1250; Fax (904) 485-2656. **Applications accepted until position is filled.**

**ANIMAL KEEPER**...requires high school diploma; prefer zoology or related degree; minimum 6 months captive wildlife experience. Operant conditioning behavior training experience beneficial. Responsible for the care of a variety of animals at a medium sized but fast growing zoo. Progressive enrichment and behavioral observation programs, utilizing operant conditioning training in animal management zoo-wide. Salary \$16,390.00 plus benefits. Send resume **by 15 October 1993** to: Colleen Kinzley, General Curator, Oakland Zoo, P.O. Box 5238, Oakland, CA 94605.



# AAZK Membership Application

Name \_\_\_\_\_ check here if renewal [ ]

Address \_\_\_\_\_

City \_\_\_\_\_ State/Province \_\_\_\_\_ Zip \_\_\_\_\_

## U.S. Members

- \$30.00 Professional/U.S.  
*Full-time Keepers*
- \$25.00 Affiliate/U.S.  
*Other staff & volunteers*
- \$25.00 Associate/U.S.  
*Those not connected with  
an animal facility*
- \$50.00 or up Contributing/U.S.  
*Individuals*
- \$50.00 or up Institutional/U.S.  
*Organizations / Institutions  
(requires Board approval)*

## Canadian Members

- \$35.00 Professional/Canada  
*Full-time Keepers*
- \$30.00 Affiliate/Canada  
*Other staff & volunteers*
- \$30.00 Associate/Canada  
*Those not connected with  
an animal facility*
- \$55.00 or up Contributing/Canada  
*Individuals*
- \$55.00 or up Institutional/Canada  
*Organizations / Institutions  
(requires Board approval)*

## International Members

- \$40.00 International  
*All members outside U.S. &  
Canada regardless of category*

## Library Only

- \$20.00 Library  
*Available only to  
established libraries*

Zoo Affiliation (if any) \_\_\_\_\_

Zoo Address \_\_\_\_\_

Title \_\_\_\_\_

Work Area \_\_\_\_\_

My check is enclosed (AAZK, Inc.)

Please charge to my credit card

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Signature \_\_\_\_\_

Mail this application to : AAZK Administrative Offices, Topeka Zoo, 635 S.W. Gage Blvd., Topeka, KS 66606-2066 U.S.A. Make checks/money orders payable to AAZK, Inc. Must be in U.S. FUNDS ONLY.

Membership includes a subscription to *Animal Keepers' Forum*. The membership card is good for free admission to many zoos and aquariums in the U.S. and Canada.

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# Animal Keepers' Forum

November 1993

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*Dedicated to Professional Animal Care*

ANIMAL KEEPERS' FORUM, 635 S.W. Gage Blvd., Topeka, KS 66606  
Phone: 1-800-242-4519 (U.S.) 1-800-468-1966 (Canada) FAX 913-273-1980

**November 1993**  
**Volume Twenty**  
**Number Eleven**

**Editor-In-Chief:** Susan Chan

**Associate Editors/Enrichment Options Coordinators:**  
Kayla Grams, Topeka Zoo & Gretchen Ziegler, Wildlife Safari Park

**Book Review Coordinators:** Melba T. Brown, National Zoo and Tom Aversa, Franklin Park Zoo

**Legislative Outlook Column Coordinator:** Phyl Nilson Wojcik, John Ball Zoo

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### AAZK PUBLICATIONS : CONTINUING DATA COLLECTION

Zoo Infant Development Project - Harmony Frazier, Woodland Park Zoo (Mammals)

Teri Maas/Maggie Liguori, Philadelphia Zoo (Birds/Nonpasserines); Kim Livingstone, L.A. Zoo (Passerines)

Jeanne Bocconelli, Newark Museum Mini-Zoo (Reptiles); Linelle Lone, Denver Zoo (Amphibians)

Diet Notebook, Mammals, Vol. II - Susan Bunn Spencer, Grand Rapids, MI



printed on recycled paper



# Table of Contents

|   |           |
|---|-----------|
| Scoops & Scuttlebutt.....   | 374 - 375 |
| Publications Available (A Guide to American Zoos & Aquariums).....  | 375       |
| Coming Events.....  | 376       |
| Births & Hatchings.....   | 377 - 378 |
| International Zoo Yearbook Available/Rainforest and Macaque Videos Available.....                           | 378       |
| Message from the President.....   | 379       |
| Bison Reintroduced to Oklahoma Tall Grass Prairie.....  | 379 - 380 |
| 1993 American Association of Zoo Keepers' Awards.....   | 382 - 384 |
| Great Ape Keeper Survey.....  | 386       |
| Enrichment Options (Primates, Muntjac).....   | 387 - 388 |
| Tamarin Food Preference Study.....  | 389 - 394 |
| Funding Falls Short in Bid to Save the World's Rhino.....   | 395 - 396 |
| Communal Behavior and Habitat Utilization Among Captive African Wild Dogs.....                              | 397 - 401 |
| Legislative Outlook.....  | 401 - 403 |
| Chapter News.....   | 404 - 406 |
| AAZK Announces New Professional/Contributing Members.....   | 406       |
| Book Reviews (An Introduction to Tropical Rain Forests & Neotropical Wildlife<br>Use and Conservation)..... | 407 - 408 |
| Beardsley AAZK Chapter Book Sale/English Zoo Animals Living High on the Gourmet Hog.....                    | 409       |
| L.I.N.K List of Regional Coordinators.....  | 410       |
| Opportunity Knocks.....   | 411 - 412 |

## Information for Contributors

Animal Keepers' Forum publishes original papers and news items of interest to the animal keeping profession. Non-members are welcome to submit articles for consideration.

Articles should be typed or hand-printed and double-spaced. All illustrations, graphs, charts and tables should be clearly marked, in final form, and should fit in a page size **no greater than 15cm x 25½cm (6" x 10")**. Literature used should be cited in the text (Brown, 1986) and alphabetically in final bibliography. Avoid footnotes. Include scientific name of species (as per ISIS) the first time it is used. Thereafter use common name. Use metric system for weights and measurements (standard equivalents may be noted in parenthesis). Use the continental dating system (day-month-year). Times should be listed as per the 24-hour clock (0800, 1630 hrs. etc.). Black and white photos **only** are accepted. Color slides should be converted to black and white prints (minimum size 3" x 5") before submission. Clearly marked captions should accompany photos. Please list photo credit.

Articles sent to Animal Keepers' Forum will be reviewed by the editorial staff for publication. Articles of a research or technical nature will be submitted to one or more of the zoo professionals who serve as referees for AKF. No commitment is made to the author, but an effort will be made to publish articles as soon as possible. Lengthy articles may be separated into monthly installments at the discretion of the editor. The editor reserves the right to edit material without consultation unless approval is requested in writing by the author. Materials submitted will not be returned unless accompanied by a stamped, self-addressed envelope. Telephone or FAX contributions of late-breaking news or last-minute insertions are accepted as space allows. However, long articles must be sent by U.S. mail. Phone is (913) 272-5821 Ext. 31. FAX (913) 273-1980.

## DEADLINE FOR EACH EDITION IS THE 15TH OF THE PRECEDING MONTH

Articles printed do not necessarily reflect the opinions of the  
Animal Keepers' Forum editorial staff or  
the American Association of Zoo Keepers, Inc.  
Publication does not indicate endorsement by the Association.

Items in this publication may be reprinted providing credit to this publication is given and a copy of the reprinted material is forwarded to the editor. Reprints of material appearing in this journal may be ordered from the editor. Back issues are available for \$2.00 each.

*This month's cover features a young Chimpanzee (Pan troglodytes) drawn by Sam Clites, a Keeper II at the Louisville Zoo, Louisville, KY. Native to equatorial Africa, the Chimpanzee lives in bands in which social structure is highly significant. Social bonds and kin ties are reinforced by grooming activities which may take up several hours of each day. Once thought to be strictly vegetarians, research has shown that Chimps eat meats ranging from termites and grubs to birds, small monkeys and in several unusual cases documented by Jane Goodall, even resorted to cannibalism. This behavior is thought to be aberrant and not the norm among this species. Mothers give birth to usually a single infant (twins are very rare) and the youngster stays with its mother several years before venturing out on its own. Among the great apes, Chimps are noted for their making and use of tools in obtaining food. Thanks, Sam!*

## Scoops

and

## Scuttlebutt

### Atlanta'93 Conference Offers Delegates Southern Hospitality

Over 250 delegates representing some 90-plus zoological facilities in 37 States, 4 Canadian Provinces as well as Australia and Belize gathered in Atlanta, GA from 10-14 October for the 20th National AAZK Conference. Those attending were treated to traditional 'Southern Hospitality' by all the folks in Atlanta who made us feel so welcome. Besides the paper sessions and workshops, the conference schedule included a day at beautiful Zoo Atlanta, a visit to the newly-open Fernbank Museum and an afternoon enjoying the beautiful Georgia countryside at Stone Mountain Park. Visits to Underground Atlanta, a lively and profitable silent auction and a closing banquet with a great dance band also made the week a memorable one. Congratulations to all those at the Zoo Atlanta AAZK Chapter and at Zoo Atlanta for all their hard work and exceptional efforts on behalf of the delegates. Special thank-yous to Co-Chairs Ellen Bradfield, Charles Horton and Brian Russell for making it all come together. You may all be very proud of a job well done.

### AKF Plans Dedicated Issues for 1994--Seeks Member Input

The editorial staff of AKF would like to plan on having two dedicated issues during 1994. We would like to have one center on the topic of elephant management, particularly in light of the ongoing controversy between free and protected contact. We invite all those involved in elephant management and husbandry to submit articles on how your program works, its advantages and disadvantages, plans for future changes etc. All aspects of elephant management including its evolution and its future direction are possible topics. Photos illustrating management techniques are also welcomed. The deadline for submitting material for the Special Elephant Issue is 15 January with an anticipated publication in the March AKF.

We would like to solicit suggestions from the membership as to a second topic for a dedicated issue. Please send your suggestions to our office by 1 February as we would like to issue a call for materials on the selected topic in the March issue of AKF.

- We would also like to encourage the membership to continue submitting articles for the regular monthly issues of the journal. All topics pertaining to captive exotic animal management, zoo animal research, husbandry techniques, etc. are welcome. We would particularly like to receive some articles on hoofstock and herptiles. Articles of a research/technical nature are submitted to the AKF review committee prior to publication. We need both long and short articles for the Forum - not all have to be technical although we do appreciate articles which contain useful, hands-on information that your fellow keepers can utilize in their institutions. Make this year the year you contribute to your professional journal--share your knowledge and experiences.

## Scoops & Scuttlebutt, *Continued*

### 1994 AAZK Research Grants Available

The American Association of Zoo Keepers, Inc. announces the availability of two \$750.00 research grants in the field of zoo biology. Interested applicants should direct their inquiries to Sue Barnard, Chairperson, AAZK Research/Grants Committee, Zoo Atlanta, Department of Herpetology, 800 Cherokee Ave., SE, Atlanta, GA 30315. The deadline for submissions is **1 March 1994**.

### ADT Forms Available Upon Request

Animal Data Transfer Forms for zoos and aquariums are available free of charge upon request. This is a professional service provided by AAZK. Contact: Bernie Feldman, Burnet Park Zoo, 1 Conservation Place, Syracuse, NY 13204. If your facility is not already using the ADT form, please encourage your administration to implement its use whenever an animal is shipped.

### Ecosystem Survival Plan Reaches \$500,000 Raised for In-Situ Conservation

The Ecosystem Survival Plan (ESP) reached the milestone of \$500,000.00 raised for the preservation of endangered species and their wildlife habitats throughout Latin America. Since the inception of ESP in 1988, the program has been well received by zoos and aquariums across the United States and Canada, has grown to include 57 member institutions, and has expanded the Conservation Parking Meter program into 152 sites throughout North America.

Currently ESP is working in five conservation sites: Costa Rica, Bolivia, Peru, Guatemala, and Panama. Together these areas comprise more than 10 million acres of critically important biological diversity.

For more information on the Ecosystem Survival Plan and its programs please contact: Norman Gershenz, National Coordinator, The San Francisco Zoo, 1 Zoo Road, San Francisco, CA 94132 or Rosemary Krussman, Program Associate, National Aquarium in Baltimore, Pier 3, 501 E. Pratt St., Baltimore, MD 21202.

### "I Witness Video" Seeks Unusual Animal Stories

The producers of the television program "I Witness Video" are looking for interesting or unusual videotape footage of zoo animals for possible inclusion in upcoming programs. If you have or are aware of such existing videotape footage you may contact Herb Rabinowitz at 1-800-558-4336.



## *Publications Available*

A Guide to American Zoos & Aquariums by Darcy and Robert Folzenlogen, Willow Press. This informative book give a listing (by geographic region) of 173 zoo and aquarium facilities across the U.S. A map for the specific section is included with each regional listing with facilities within that region noted by number. Under each facility the following information is included: Visitor Information (directions, hours, admission/parking fees, membership fees, programs & tours offered); Collections and Exhibits (collection statistics, any special exhibits); Captive Breeding and Research (breeding successes/research projects ongoing); Seasonal Festivals & Programs and a contact for further information (including address and phone number). Black and white photographs of a number of the facilities are featured throughout. A short list of conservation organizations is included before the bibliography and appendix. While some of the information contained in this book may quickly become outdated (i.e. number of species in collections; admission fees), there is much information that should prove useful and dependable for years to come. The book is available in many zoo gift shops or may be order directly from the publisher for \$16.95 plus \$2.00 S&H. Order from Willow Press, 6053 S. Platte Canyon Rd., Littleton CO 80123 or 1030 Willow Ave., Glendale, OH 45246. Make checks/money orders payable to Willow Press.



# Coming Events

## Second National Watchable Wildlife Conference

November 11-13, 1993

Corpus Christi, TX

Co-sponsored by 13 private, State and Federal conservation agencies/associations, this conference aims at promoting watchable wildlife as an important conservation goal. Will include speakers, panel discussions, interactive sessions and optional field trips including visits to Aransas National Wildlife Refuge and Padre Island National Seashore. For further information contact National Watchable Wildlife Conference at 400 Mann, Suite 909, Corpus Christi, TX 78401.

## International Conference on Orang-utans: The Neglected Ape

March 5-8, 1994

Fullerton, CA

An International Conference on Orang-utans: The Neglected Ape will be co-hosted by the California State University, Fullerton; the Zoological Society of San Diego; and the Atlanta/Fulton County Zoo Inc. Paper and poster presentations are scheduled for 5-7 March, in Fullerton, CA, followed by a post-conference trip to the San Diego Zoo on 8 March, with attendees participating in workshops and tours. For registration information and abstract guidelines, please contact: Norm Rosen, Dept. of Anthropology, California State University, Fullerton, CA 92634-9480, FAX: 310-798-0576.

## ARAZPA/ASZK Annual Conference

April 17-22, 1994

Darwin, NT, Australia

Joint meeting of the Australasian Regional Association of Zoo Parks and Aquaria and the Australasian Society of Zoo Keepers will be hosted by Territory Wildlife Park and Tipperary Sanctuary. For further information contact: Michelle Nuske, Conference Coordinator, Territory Wildlife Park, P.O. Box 771, Palmerston, NT 0831, Australia.

## Association of Avian Veterinarians

Sept. 27 - Oct. 1, 1994

Reno, NV

The AAV has issued a Call for Papers for its 15th Conference. Special consideration will be given to papers addressing surgery, ratites, aviculture, pigeons, reports on original research, and case reports as well as topics for the technicians's portion of the conference. Materials must be original and unpublished. Deadline for receipt of manuscripts is 1 March 1994. The AAV will also be offering a day-long comprehensive program on avian surgery on 27 March, 1994 in Atlanta, GA. For further information or to request a Call for Papers application, contact the AAV Conference Office, 2121 So. Oneida St., Ste. 325, Denver, CO 80224-2552, (303) 756-8380, FAX (303) 759-8861.

## 1994 AAZPA Regional Conferences

**6-8 March 1994** - Central Regional Conference. For more information, contact Donna Chain, Oklahoma City Zoo, 2101 N.W. 50th St., Oklahoma City, OK 73111 (405) 424-3344.

**20-22 March 1994** - Southern Regional Conference. For more information, contact Beverly Rutland, Montgomery Zoo, P.O. Box ZEBRA, Montgomery, AL 36109 (205) 240-4900.

**10-12 April 1994** - Western Regional Conference. For more information, contact Jean Miller, Micke Grove Zoo, 11793 North Micke Grove Road, Lodi, CA 95240 (209) 953-8840.

**17-19 April 1994** - Great Lakes Regional Conference. For more information, contact Carol Pedersen, Blank Park Zoo, 7401 S.W. 9th St., Des Moines, IA 50315 (515) 285-4722.

**1-3 May 1994** - Northeastern Regional Conference. For more information, contact Troy Stump, ZOOAMERICA, North American Wildlife Park, 100 West Hersheypark Dr., Hershey, PA 17033 (717) 534-3862.



# Births & Hatchings



**Discovery Island (Orlando, FL)**...reports the following significant B&H for January-September 1993:

**Mammals** - 4.0.3 Brown/Tufted capuchin (*Cebus apella*) [0.0.1 DNS]; 1.0 Collar lemur (*Eulemur fulvus collaris*) [E/CITES I] [1st for Discovery Island]; 0.0.1 Reeves' muntjac (*Muntiacus reevesi*).

**Birds** - 0.0.3 Golden conure (*Aratinga guarouba*) [E/CITES I - 0.0.3 DNS]; 2.1.1 Maguari stork (*Ciconia maguari*) [0.0.1 DNS]; 0.4 Tawny frogmouth (*Podargus strigoides*) [0.0.2 DNS - 1st for Discovery Island]; 0.0.1 King vulture (*Sarcorhamphus papa*) [CITES III]; 0.0.1 Thick billed parrot (*Rhynchopsitta pachyrhyncha pachyrhyncha*) [E/SSP - 1st for Discovery Island]; 1.23 Green aracari (*Pteroglossus viridis*); 0.0.2 Rhinoceros hornbill (*Buceros rhinoceros*) [CITES II - 0.0.2 DNS]; 0.0.4 Cape teal (*Anas capensis*) [1st for Discovery Island - 0.0.4 DNS]; 0.0.1 Demoiselle crane (*Anthropoides virgo*) [0.0.1 DNS]; 0.0.4 North American woodduck (*Aix sponsa*); 0.0.78 Scarlet ibis (*Eudocimus ruber*) [CITES II - 0.0.24 DNS]; 0.0.26 Ringed teal (*Callometia leucophrys*) [0.0.20 DNS]; 0.0.2 Keel-billed toucan (*Ramphastos sulfuratus*) [CITES III - 1st for Discovery island - 0.0.2 DNS]; 0.0.12 Roseate spoonbill (*Ajaia ajaja*) [0.0.5 DNS]; 0.0.5 Black-necked aracari (*Pteroglossis aracari*) [1st for Discovery Island - 0.0.1 DNS]; 0.0.9 American flamingo (*Phoenicopterus ruber*) [CITES III - 0.0.3 DNS]; 3.1.2 Redhead (*Aythya americana*) [3.1.2 DNS]; 0.0.5 Red-legged seriema (*Cariama cristata*) [0.0.2 DNS]; 0.0.2 Puna teal (*Anas versicolor puna*) [1st for Discovery Island - 0.0.2 DNS]; 0.0.2 Trumpeter hornbill (*Bycanistes bucinator*) [1st for Discovery Island]; 0.0.2 Blue and yellow macaw (*Ara ararauna*) [CITES II]; 0.0.4 Black-necked swan (*Cygnus melanocoryphus*) [CITES II - 1st for Discovery Island - 0.0.4 DNS]; and 0.0.6 Black bellied whistling duck (*Dendrocygna autumnalis*) [CITES III - 1st for Discovery Island - 0.0.6 DNS].

**Reptiles** - 0.0.1 Girdle-tailed lizard (*Cordylus tropidosternum*) [CITES II - 1st for Discovery Island - 0.0.1 DNS]. submitted by Jamie Sincage, Animal Care Specialist, Discovery Island, Orlando, FL.

**Brookfield Zoo (Brookfield, IL)**...reports the following significant B&H for September 1992 through August 1993:

**Mammals** - 2.3.2 Goeldi's monkey (*Callimico goeldii*) [E/SSP - 0.1 1st for pair]; 1.1 Colobus (*Colobus guereza*) [SSP]; 0.0.9 Rodriquez flying fox (*Pteropus rodricensis*) [E/SSP/U - 0.0.2 1st time birth to dam]; 0.0.4 Dwarf mongoose (*Helogala parvula*) [U]; 0.1 Aardvark (*Orycteropus afer*) [U]; 0.0.2 Short-eared elephant shrew (*Macroscelides proboscideus*) [U]; 1.0 South American tapir (*Tapirus terrestris*) [E]; 0.0.1 Addax (*Addax nasomaculatus*) [E/SSP - bell ranch]; 3.1 Sand cat (*Felis margarits*) [E/SSP/U]; 1.1 Lesser slow loris (*Nysticebus pygmaeus*) [U - females rarely born in captivity]; 2.0 Grevy's zebra (*Equus grevyi*) [T]; 0.1 Bornean orangutan (*Pongo pygmaeus pygmaeus*) [E/SSP] [Zoo's 1st; pair's 1st; female trained to care for infant]; 0.0.9 Naked mole rat (*Heterocephalus glaber*) [U].

**Birds** - 0.0.5 Blue-crowned parrot (*Loriculus galgulus*) [1st for 2 pairs]; 0.0.2 Bali/Rothchild's mynah (*Leucopsar rothchildi*) [E/SSP - hand-reared from hatching]; 1.1 Crested wood partridge (*Rollulus roulroul*) [1st hatching from pair - young were parent reared]; 0.0.1 Turquoise tanager (*Tanagara mexicana*) [1st for pair].

## **Births & Hatchings, Continued**

**Reptiles** - 0.0.31 Indian cobra (*Naja naja*) [U] - 1st time birth - all survived]; 0.0.1 Florida box turtle (*Terrapene carolina bauri*) [T-state level - U - 1st time birth]; 0.0.5 Royal/Ball python (*Python regius*) [1st time birth - 1st time birth from pair - all survived] [1st time breeding, hatching and incubation on exhibit in any zoo anywhere]. *submitted by Elizabeth Brost, Primate Keeper, Brookfield Zoo, Brookfield, IL.*



## ***International Zoo Yearbook, Vol. 31*** ***Available from Zoological Society of London***

The Zoological Society of London is pleased to announce the availability of Volume 31 of The International Zoo Yearbook, which this year features a look at the species from "Down Under". This particular volume contains a section of 22 articles on Australasian fauna giving an overall view of cooperative and coordinated work in Australia and New Zealand emphasizing particularly where there is an interlink with management programs in the wild and in captivity. Specific examples are given of species projects and of conservation and research programs. Among species included in this section are: Common tree weta, Western swamp tortoise, Tuatara, Striped legless lizard, New Zealand pigeon, Golden-shouldered parrot, Helmeted honeyeater, Platypus, Eastern barred bandicoot and Leadbeater's possum. Following the Australasian section are 23 articles dealing with new developments in the zoo world. These topics range from reproduction and husbandry of the Water monitor and the captive management of the Red kangaroo to hand-rearing the Slender Loris and the Cologne Zoo diet for Lowland gorillas to eliminate regurgitation and reingestion. A wide variety of good, useful information. Volume 31 also contains a 110 page section of vertebrate species bred in collections world-wide in 1990, a 3-page census of rare animals held in collections on 1 January, 1991, and an up-to-date list of International Studbooks. The Volume contains 443 text pages with diagrams and photographs and costs £52.00 hardback and £45 softcover. Payments should be sent in British pound sterling (check with your local bank's foreign desk for current exchange rates). Order from the Editor, IZY, The Zoological Society of London, Regent's Park, London NW1 4RY, Great Britain.



## **Rainforest and Macaque Videos Available**

A timely 35-minute video, Promising Approaches to Tropical Forest Management in Latin America, shows how natural forest management can provide a viable alternative to deforestation in the humid tropics. Through interviews with experts and footage of ongoing natural forest management projects in Mexico, Costa Rica, and Ecuador, the video describes how tropical forests can be sustainably managed for timber and other products. Such use can maintain a high level of biological diversity while providing a competitive economic return to those who would otherwise convert the forest to cropland or pasture.

The video is a useful resource for organizations concerned with promoting forest conservation, and an ideal educational tool that introduces the many ways in which standing forests are valuable. The video, available in English and Spanish, is being distributed by the Tropical Forest Management Trust, at \$18 each. Checks should be made to Tropical Forest Management Trust, Inc., 6124 SW 30th Ave., Gainesville, FL 32608. Tel. (904) 331-2007; Fax (904) 331-3284.

Video tapes on the colony of stump-tail macaques (*Macaca arctoides*) on Tanaxpillo Island in Lake Catemaco, Veracruz State, Mexico are available. The tapes document some of the logistics and methods used in a study on the social ecology of stump-tail macaques and aspects of their behavior and ecology. Copies of the tape may be purchased for \$18. Contact Larry Guss, Guss Adventure Travel Productions, 5319 Strathmore Avenue, Kensington, MD 20895. Tel: (301) 933-3337.

*>GreenDisk July/August 1993*



## Message From the President.....

I have just returned from meeting with the membership at our annual AAZK National Conference in Atlanta. The conference was quite a success and very educational. The membership owes a great deal of thanks to the Staff and volunteers of Zoo Atlanta for serving as gracious hosts.

The membership quorum voted on the By-law revisions and they were passed by overwhelming voice vote. The three major revisions included expanding the Board of Directors to seven members and changing the duties of the President to make this office directly responsible for communication to the membership; changing the term of office for Board members to coincide with conference dates; and Presidential and Vice-Presidential elections will now be decided by Executive Committee instead of by internal appointment.

I would like to take this opportunity to introduce the membership to your new Board of Directors.

President, Jan McCoy, Washington Park Zoo  
Vice President, Rachel Rogers, San Diego Zoo  
Board Member, Mark de Denus, Assiniboine Park Zoo  
Board Member, Ellen Bradfield, Zoo Atlanta  
Board Member, Alan Baker, Burnet Park Zoo  
Board Member, Ric Urban, Houston Zoological Garden  
Immediate Past President, Ed Hansen, Reid Park Zoo

We will be glad to help you with any questions or concerns that you may have regarding your Association. Please remember that this Association conducts business year-round and we are elected to serve your needs.

As outgoing President, I would like to take the time to thank the membership, fellow Board members and staff for the support that you have given to the Association and to me. Your support, both financial for the Association, and moral for myself, have made the job of President a little bit easier over the past two years. I look forward to continuing to serve the membership in the capacity of Immediate Past President. Thanks to everyone.



## Bison Reintroduced to Oklahoma Tall Grass Prairie Preserve

On 18 October, 1993, The Nature Conservancy released 300 Bison (*Bison bison*) onto the Tallgrass Prairie Preserve in Osage County, OK. It is hoped the herd will eventually reach 1800 animals.

Throughout the latter part of the 19th century, the westward migration of European settlers, ranchers and farmers radically transformed the face of the great plains of the midwestern United States. Cowboys herded grazing cattle throughout the prairie grasslands. What the cattle didn't eat was plowed under by farmers to make room for their crops. Towns sprang up -- displacing the native inhabitants of the prairies and forever changing the face of the landscape.

## Bison Reintroduction, *Continued*

As many as 142 million acres of tallgrass prairie once covered the American heartland and the tallgrass ecosystem once supported upwards of 60 million Bison. Now, less than ten percent of this native ecosystem remains. The southern end of the greatest stretch of tallgrass prairie remaining in North America is found in northeastern Oklahoma -- in and around the old Barnard Ranch.

In 1989, the Nature Conservancy purchased this 30,000-acre ranch, located 75 miles northwest of Tulsa. The ranch was remarkably in tact as a tallgrass prairie ecosystem. It had been grazed but never plowed. The Conservancy's goal is to restore a perfectly functioning presettlement prairie - one shaped by the natural elements of grazing Bison and natural prairie fires. Fire and Bison, the two key elements of a working tallgrass ecosystem, have been all but eliminated from the American landscape.

For the last several years, the Barnard Ranch has been recuperating from its years as a working cattle ranch. The native tallgrasses have been recolonized and are growing once again. Recently, prescribed burns have been carefully introduced by Conservancy land stewards to stimulate the growth of some 250 indigenous species, such as the bluestem grass which can reach a height of 12 feet.

Now the missing piece of the tallgrass prairie puzzle - the American Bison - has been reintroduced onto the ranch. This initial herd is fenced into a 5,000-acre tract. Such a fencing operation was daunting both physically and financially. When Conservancy officials began talking to local businessmen about their plans to restore the local natural history, good things started to happen. Osage County is wildcatter country. Local oilmen figured that their old drilling pipe would make great fencing and 14 miles of pipe was cut to length and hauled to the preserve for free. Local in-kind gifts for the fencing totaled more than \$400,000.

A local ranching corporation plans to donate a herd of 300 Bison and bison-working equipment, valued in excess of \$300,000. This is doubly beneficial because the original plan called for the Conservancy to purchase a relatively young herd. But now, with a mix of mature and young bison in an already established herd, the natural process of reintroduction has been advanced--there will be a calf crop next spring--two years ahead of original projections.

Another Tulsa businessman has helped assure that the herd's development will be easily tracked. Instead of tagging the Bison with plastic ear tags, microchips will be implanted behind their ears. Each animal's history will be retrieved on a computer with the wave of a scanning wand.

The Conservancy won't eliminate cattle from the picture entirely. Not only is sharing the preserve with cattle beneficial to good relationships with neighbors, but cattle can help to revive the prairie. For 90 days, from mid-spring to mid-summer, 8,800 head of cattle from a neighboring ranch will be allowed to graze on the preserve. This activity will mimic the historic pattern of large numbers of Bison sweeping through, grazing heavily, then moving on.

Plans call for similar cattle-grazing patterns to continue until the Bison herd reaches 1800. At that point, cattle grazing will no longer be needed. Meanwhile Conservancy stewards will monitor the grazing and social patterns of the Bison in order to develop further strategies for prairie restoration.

The Osage Indian Tribal Council owns the mineral rights in Osage County and The Nature Conservancy has worked closely with tribal elders from the beginning stages of the preserve. The local independent oil producers, who lease oil rights from the Osage Indians, have also come to see the Conservancy's involvement as generally positive--oil production continues throughout the fencing and prairie restoration process. This is yet another example that sustainable economic development and sound ecology -- in this case oil, ranching, and Bison reintroduction -- are not mutually exclusive.

*>from The Nature Conservancy Project Update, September 1993*







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# 1993 American Association of Zoo Keepers' Awards

The following awards were presented at the 20th National AAZK Conference held in Atlanta, GA from 10-14 October 1993. The Jean C. Hromadka Excellence in Zoo Keeping Award, Meritorious Achievement Award and Certificate of Merit for Zoo Keeper Education are selected by the AAZK Awards Committee from nominations received from the membership. Janet McCoy, Metro Washington Park Zoo, Portland, OR chaired the Awards Committee this year. The Certificates of Recognition and Appreciation are given by the AAZK Board of Directors. The Excellence in Journalism Awards are selected by the editorial staff of *Animal Keepers' Forum*.

## The Jean C. Hromadka Excellence in Zoo Keeper Award Recipients

*In recognition of their professional attitude, true dedication, superb application of animal husbandry practices and contributions to the welfare of the animal life placed in their charge, AAZK presents the following individuals with this award:*

**Marcy Miller-Lebert, Pt. Defiance Zoo & Aquarium, Tacoma, WA**

*Specifically noted were outstanding efforts in husbandry and enrichment, especially the propagation of Eiders and Emperor Geese. Also noted was her work on conservation projects.*

**Karen Krebs, Arizona-Sonora Desert Museum, Tucson, AZ**

*Specifically noted were outstanding efforts in husbandry and environmental enrichment, especially with hummingbirds. Also noted was her work in educational outreach and staff training.*

**Jody Courtney, San Diego Children's Zoo, San Diego, CA**

*Specifically noted was the propagation of *Dendrofagus goodfellowi* and her work with staff training and in the design of educational programs.*

## **Certificate of Merit for Zoo Keeper Education Recipient**

*In recognition of outstanding support of continuing education and keeper involvement in research projects, AAZK presents this award to:*

**Donna M. Fernandez, Ph.D., Franklin Park Zoo, Boston, MA**

*For development of a research keeper training program to educate keepers in the design, execution and analysis of animal behavior studies. Ongoing monthly seminars and workshops strengthen such research skills and add to the keeper's overall excellence in animal husbandry.*

## **Meritorious Achievement Award Recipient**

*In recognition of outstanding contributions in the field of wildlife conservation and education beyond the scope of regular zoo keeper duties, AAZK presents this award to:*

**Cynthia Cheney, Metro Washington Park Zoo, Portland, OR**

*In recognition of outstanding contribution in the field of wildlife conservation and animal husbandry which has opened up penguin communication worldwide, and specifically for developing and publishing the Spheniscus Penguin Newsletter.*

Certificates of Recognition and Appreciation Recipients

*These awards are given by the AAZK Board of Directors to individuals or groups who have provided volunteer efforts and/or services to the Association. Certificates of Appreciation are to recognize those outside the Association and Certificates of Recognition acknowledge contributions made by AAZK members on Association projects.*

Certificates of Recognition Recipients

**Kathy Kelly, National Zoological Park, Washington, DC**  
*for serving as Initiator and Chairperson of M.A.R.C. (Making A Realistic Contribution), an international outreach program which provides scientific resource materials to zoological institutions in countries where such materials are not available.*

**Patricia E. Sammarco, San Diego, CA**  
*in recognition of her work as editor of An Approach to Zookeeping and her long-time service to the Association.*

**Heidi Manicki, Metro Toronto Zoo, Toronto, Ont. Canada**  
*for serving as Coordinator of the Keeper Accommodations List (KAL)*

**Pam McDougall and Mona Keith**  
**Calgary Zoological Gardens, Calgary, AB, Canada**  
*for their service as International Affairs Coordinators for the Association*

**Charles Horton, Ellen Bradfield and Brian Russell**  
**Zoo Atlanta, Atlanta, GA**  
*in recognition of their service to the Association by serving as Co-Chairs of the 20th National AAZK Conference*

Certificate of Appreciation Recipients

**National Zoological Park, Washington, DC**  
*in appreciation of their support of M.A.R.C. (Making A Realistic Contribution)*

**Zoo Atlanta, Atlanta, GA**  
*in appreciation for serving as the Host Institution for the 20th National Conference of the American Association of Zoo Keepers, Inc.*

Distinguished Service Plaque

*was presented to*  
**Zoo Atlanta AAZK Chapter**  
*for their service as the Hosts of the 1993 AAZK National Conference*

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## Excellence in Journalism Awards

Outstanding Recognition: "Breeding Fairy Bluebirds at the Denver Zoo"  
Suzanne Chacon, Denver Zoological Gardens, Denver, CO

Outstanding Recognition: "Salmonellosis at the Infant Isolation Unit SDWAP"  
Debi Espinoza-Bylin, San Diego Wild Animal Park, San Diego, CA

Outstanding Recognition: "Four Years of Hummingbird Breeding at ASDM"  
Karen Krebbs, Arizona-Sonora Desert Museum, Tucson, AZ

Outstanding Recognition: "Captive Breeding of the White-backed Mousebird (*Colius colius*)"  
Kathy Ruffino, National Zoological Park, Washington, DC

Outstanding Recognition: "The Early Introduction of a Hand-Reared  
Infant Orangutan to a Surrogate Mother"  
Carolyn Kennedy, Audubon Park & Zoological Gardens, New Orleans, LA

Outstanding Recognition: "Breeding and Rearing Efforts with  
Sergeant Major (*Abudefduf saxatilis*) at the Indianapolis Zoo"  
Craig N. Atkins, Indianapolis Zoo, Indianapolis, IN

Cited for Excellence: "A Method for Rearing Shorebirds"  
John Creviston, Calgary Zoo & Botanical Gardens, Calgary, AB, Canada

Cited for Excellence: "Maintaining a Small Penguin Colony or  
Close Encounters of the Bird Kind"  
Jeanette Nadeau, Roger Williams Park Zoo, Providence, RI

Cited for Excellence: "Conditioning Incompatible Behavior to  
Curb Aggression in a Bull Elephant"  
Jennine Antrim, Zoological Society of San Diego, San Diego, CA

Cited for Excellence: "The Effects of Alien Species on Hawaii's Ecosystem"  
Charlene McKee, Honolulu Zoo, Honolulu, HI

Cited for Excellence: "The 1991 Saiga Neonate Study"  
Karla J. Michelson and Esther S. Rubin, San Diego Wild Animal Park, San Diego, CA

Outstanding Cover Art: Victorian Koala  
Mary Deckert, Los Angeles, CA



## **Police Hunt Killer of Rare Bird**

Reuters News Service out of Taipei reported that police there were hunting for the killer of a Black-faced spoonbill (*Platalea minor*). This subspecies is so rare that fewer than 300 are thought to exist. Police officials said that bird watchers had found the bird in a swamp in Chiku village, 320 km south of Taipei. The animal had been shot and despite efforts at a local hospital, the animal died on 30 November. The swamp where it was discovered is at the mouth of the Tsengwen River and is the wintering grounds for nearly 300 Black-faced spoonbills that migrate from the northern Korean Peninsula.

Conservationist Kuo Tung-hui reported that bird watchers using telescopes had spotted at least two other injured spoonbills. The report added that a few villagers from Chiku had threatened to kill all of the birds because their presence was hampering plans to develop the area into an industrial park, a project strongly opposed by local conservationists.



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## ATTENTION Great Ape Keeper Survey



I am a keeper at the National Zoo in Washington, DC. I would like to communicate with fellow great ape keepers concerning their daily duties and special projects in which they participate. I would appreciate each one of you taking a few minutes to answer the following questions. Results will be tabulated and shared with respondents. If enough people respond, I will do an article for AKF. This survey can be very useful in increasing our professional image for ourselves, our zoos and the public. I realize that many of us have no "routine" days, but if you can provide even an "average" day answer, it will be helpful. Please send responses to: Melanie Bond, 6013 27th Road North, Arlington, VA 22207.

How many animals do you care for on a daily basis?

How many exhibits, holding areas, etc. do you maintain?

Do you care for other species as well as apes? If so, which ones?

What percentage of your day is spent in: (use an \* to indicate duties performed on an occasional basis)

\_\_\_ exhibit cleaning

\_\_\_ feeding

\_\_\_ food preparation

\_\_\_ enrichment activities

\_\_\_ public interaction (non-educational; i.e. patrolling)

\_\_\_ public education (scheduled programs, i.e. meet-a-keeper talk)

\_\_\_ public education (informal - answering questions)

\_\_\_ research assistance (collecting data for someone else)

\_\_\_ research of your own

\_\_\_ exhibit repair (do you do plumbing, carpentry, etc.?)

\_\_\_ veterinary (i.e. medicating animals, assisting with other treatment/procedures)

What other duties do you perform? (indicate if it's a daily or irregular basis). I'm looking for items such as: VIP or behind-the-scenes tours, exhibit planning/consultation with designers and architects, public education off zoo grounds, i.e. school visits, any others?

What would you like to see as part of your duties that is not currently included in your job description? If you have a written job description, or protocol for your responsibilities, please include a copy with your response.

Thank you for your input. I hope other keepers may find this information helpful, and similar surveys will be undertaken for hoofed stock, carnivores, etc.





by Kayla Grams, Keeper, Topeka Zoo and  
Gretchen Ziegler, Keeper, Wildlife Safari Park

The Environmental Enrichment Workshop at the National AAZK Conference in Atlanta, GA was another huge success! Along with Michelle Acuna from Arizona-Sonora Desert Museum, we discussed issues from the First Environmental Enrichment Conference held in Portland, OR, and Diana Frisch from the Columbus Zoo, talked about her position as Enrichment Coordinator and the utilization of volunteers. Thanks to Phoenix, Sacramento, Monkey Jungle, and Atlanta keepers for contributing videotapes for the workshop. We appreciate the work you put into this. A synopsis of the workshop will be published in the Conference Proceedings. It is encouraging to know that there are a lot of ideas out there. Write your ideas down and send them in!! Once again thanks to all who participated!!

**PRIMATES** - This is a response to Enrichment Options, May '93: "Primates" by Maria Browning. The "surprise bag" mentioned in this contribution consists of a Russian doll-style layering of size graded bags and/or boxes. These must be torn or otherwise opened by primates in order to ferret out the "treat" food in the innermost compartment. Although some may view this enrichment as containing an innate drawback (i.e. the resulting appearance of an "unnatural" looking paper mess in the enclosure) the value of this simple, no-cost "surprise present" should not be underestimated. The small motor activity of further tearing up the bags and boxes afterwards adds to the original enrichment, and primates have ample time, when this item is presented early in the day, to accomplish maximum bag and box demolition! In addition, boxes may be first carried around and used as temporary blocks or pounding objects. Large in-tact bags can also be used for hiding spaces and other play.

The cross-section in the picture shows a male White-faced capuchin (*Cebus capucinus*) in progress with his enrichment. He is fond of sitting on small boxes and has also been observed dragging large open paper bags around the enclosure to create commotion, as well as using large sections of paper as "rugs" to lay on. His paper shredding activities take place at random intervals throughout the day.



C. DORIAN

## Enrichment Options, *Continued*

As close primate relatives, we have more than one holiday centered around the tradition of present opening, its anticipation, and the element of the unknown. Anticipation extends the enrichment beyond the moment of receiving, and we do this with our monkeys by showing the bag sometime beforehand, along with a verbal message such as, "This is for you this morning", or "This is for you in 5 minutes" etc. I consider that often repeated phrases are understood and am always careful to follow through, since this is a part of building the important element of trust. Also, involvement in this item will be extended by adding a few treats inside each layer to slow down the opening process.

Although we have used this type of enrichment for several years, sometimes as often as daily during the winter, a high interest level seems to continue, probably due at least in part to the element of surprise. They have come to expect that the treats will always be desirable, (i.e. grapes, popcorn, blueberries, walnuts, raisins, mealworms, etc.), but the type/types of treat food and quantity remain to be discovered each time a new bag is presented.

Before these Capuchins were sufficiently familiar with the edible content of these bags, we tried placing one on top of the enclosure. A small amount of investigation was done, but by the end of the day, the bag remained largely intact. After placing bags inside the enclosure for a period of several weeks to ensure familiarity, this male and several others will now inconvenience themselves in order to laboriously tear open bags left outside on the wire cage top. In this case, we sometimes offer only one bag but when placed inside in an enclosure housing several monkeys, we offer a present bag for each individual, plus one or two extras, since dominant members are often greedy and seem to require more than their share.

Having had past experience with raccoons, it seems that this would work well for them too.

-- Camille Dorian  
Monkey Zoo, Orinda, CA

**MUNTJAC** - Whole pumpkins given to animals on exhibit. Very high for male sparring, gouging, and pushing.

-- Mike Richardson, Keeper  
The Phoenix Zoo, Phoenix, AZ

**PUMPKINS, GORDS, SQUASH** - These seasonal fruits can be used as enrichment for many animals including carnivores, primates, elephants, condors, and others.



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## Information Please

I am interested in software packages made for zoo keepers, i.e. daily reports, individual animals' histories, medical records, feeding charts, etc. I would like to know how much they cost, their compatibility, how to obtain them, and if they are useful and liked. Please send information to: Marcy Miller-Lebert, Pt. Defiance Zoo and Aquarium, 5400 N. Pearl St., Tacoma, WA 98407. (Editor's note: please also send a copy of this information to AAZK AO, 635 S.W. Gage Blvd, Topeka, KS 66606). Thanks.





# Preference for Vegetables Coated with Syrup or Cricket and Worm Sauce in the Golden Lion Tamarin

(*Leontopithecus rosalia rosalia*)

By  
S.L. Tomoser and P.J. Kulkosky  
Department of Psychology  
University of Southern Colorado, Pueblo, CO

## Abstract

The Golden lion tamarin (*Leontopithecus rosalia rosalia*) is an endangered primate and the subject of intense conservation efforts in zoos and its native Brazil. Little is known of its feeding habits and preferences although such knowledge is vital for its maintenance and propagation in captivity and efforts at reintroduction into its natural habitat. We studied the effects of vegetable type (cauliflower vs. broccoli), repeated exposure to choice, sweetening and application of a cricket and worm "sauce" to vegetables, on intake of food in the golden lion tamarin. Two individually housed Golden lion tamarins at the Pueblo Zoological Gardens were given 3.5 hours of access to a choice of cauliflower or broccoli, either unsweetened or sweetened (with Karo® syrup), or uncoated or coated with a cricket and worm sauce, on alternate days. We found that golden lion tamarin reliably ( $p < 0.05$ ) preferred broccoli to cauliflower, and sweetening had no effect on intake, but the addition of the meat sauce increased vegetable intake. These data may prove helpful in improving the maintenance and propagation of the Golden lion tamarin in captivity.

## Introduction

The Golden lion tamarin is one of three subspecies of *Leontopithecus*. These species of tamarin are in grave danger of becoming extinct in their natural habitat. In 1972 many institutions that housed the Golden lion tamarins decided to work together to increase their numbers (Bridgewater, 1972; Kleiman, 1981; Kleiman, Beck, Dietz, Dietz, Ballou and Coimbra-Filho, 1986; Kleiman and Jones, 1978; Mallinson, 1986). Several research projects have been conducted to determine the important factors in successful propagation of this species in captivity (Coimbra-Filho, 1965; DuMond, 1971; DuMond, Hoover and Norconk, 1979; Levy and Artecona, 1964; Rohrer, 1979). Also, studies have been conducted concerning the behaviors they exhibit, such as scent marking, contact behavior, group relations, communication, sexual behaviors, breeding problems, and food-sharing (Brown and Mack, 1978; Epple, 1975; Kleiman and Mack, 1980; Price and Hannah, 1983; Rathbun, 1979; Snowdon, Hodun, Rosenberger and Coimbra-Filho, 1986; Snyder, 1974). However, little has been published on their food preferences.

According to Patricia A. Snyder (1974), improper diet and subsequent nutritional problems in part have contributed to past decreases in Golden lion tamarin populations in captivity. Yet, there have been a number of scientific studies of taste preferences in related callitrichidae species. Glaser, Hellekant, Brouwer and van der Wel (1978) found that the protein monellin, which has a sweet taste, was slightly preferred to water by *Cebuella pygmaea* and *Saguinus fuscicollis nigrifrons*. Hellekant, Glaser, Brouwer and van der Wel (1981) and Steiner and Glaser (1984) showed that several callitrichids responded electrophysiologically and behaviorally to artificial and natural sweeteners and glucose. Levy and Artecona (1964) reported that in the wild the marmoset eats items high in protein such as insects, eggs and newborn birds, along with fruits and vegetables. They recommended dusting baked food with powdered sugar, and were able to get marmosets to consume castor oil, which some did not like, by adding orange juice to it.

In our study, we set out to determine if sweetening vegetables, or adding a cricket and

## Tamarins' Food Preference, *Continued*

mealworm sauce, would increase their intake. Crickets and mealworms are preferred food items, but vegetables are not preferred in a free-choice "cafeteria" situation (Power, 1992). Indeed, often the breeding female in a group of marmosets consumes the largest share of highly preferred, non-vegetable foods (Petto and Devin, 1988; Tardif and Richter, 1981). Thus, reproductive problems can result from self-selected, imbalanced diets. Also, depigmentation in captive Golden lion tamarins has been attributed to diets deficient in carotenoids, which are found in vegetables (Coimbra-Filho, 1965; Kleiman, 1981). Since vegetables are an integral part of the tamarins' diet in many institutions, knowledge of their preferences may prove useful in efforts to increase their breeding capability, and appearance.

### **Method**

#### Subjects

Two Golden lion tamarins were the subjects for the two experiments. One is a female, Rita, animal number 900056, who was born 4 April 1981 at the Henry Doorly Zoo in Omaha, NE. The second subject is a male, Ray, animal number 900057, who was born 11 October 1987 at the Woodland Park Zoo in Seattle, WA.

#### Apparatus

The two Golden lion tamarins were housed in separate exhibits at the time of the experiments due to their recent aggressive behavior towards each other (cf. Inglett, French, Simmons and Vires, 1989).

The exhibit in which Rita was housed measured 10' 6" L x 6'8" W x 8'3" H. The front of the exhibit is one-half inch plate glass. Access to the exhibit is gained through a glass door at the front of the exhibit. The other three walls of the exhibit are concrete, and painted in shades of blue, green and brown. The floor of the exhibit is 1-inch x 1-inch green tiles and covered by a substrate of straw. A concrete shelf is present on the left wall. In the back of the exhibit another concrete shelf, which is connected to the two side walls, supports a wooden nest box with a sliding door. The top of the exhibit is wire mesh. Through this wire mesh, electric light and sunlight shine on the inhabitant. Throughout the exhibit, tree branches, placed horizontally and vertically, are available for climbing and sitting.

The exhibit in which Ray was housed had the same approximate dimensions, and was nearly identical, except that the concrete shelf is present on the right wall.

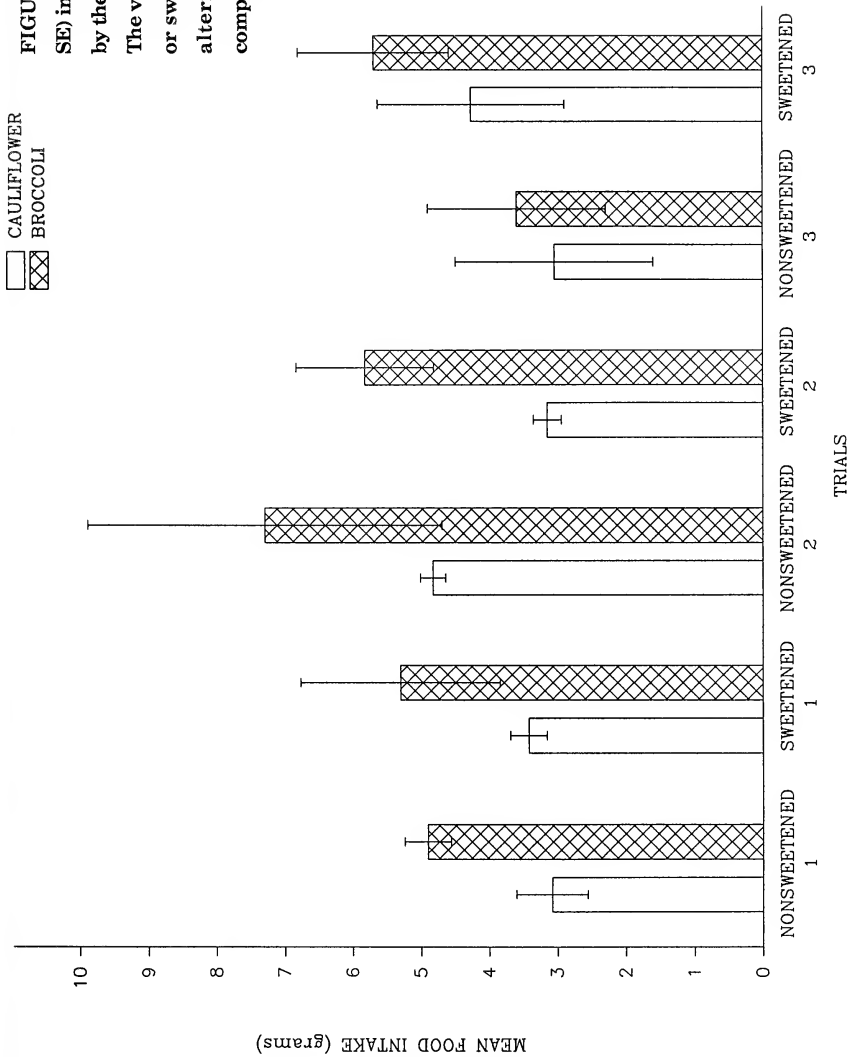
#### Procedures

For the first experiment on 9, 16 and 23 January 1992, each individual subject was given 15 grams each of cauliflower and of broccoli for a total of 30 grams. The vegetables were cooked for five minutes in a microwave and cut into small pieces that are easily carried by the tamarins. The vegetable mixture was added to their remaining daily morning (0800 hrs) ration of marmoset diet (ZuPreem® marmoset diet, Premium Nutrition Products, Topeka, KS); 2 oz. per animal) at 1200 noon. On 14, 21 and 28 January 1992, each individual subject was given 13 grams each of cauliflower and broccoli for a total of 26 grams. The vegetables were prepared as described above, except that the vegetable mixture was coated with two grams of Karo® syrup. The Karo® syrup was poured on to the vegetable mixture and it was then added to each subject's food bowl as described above.

For the second experiment on 23, 28 May and 9 June 1992, each subject was given 15 grams each of plain cauliflower and broccoli for a total of 30 grams. On 26 May and 4 and 11 June 1992, 26 grams of this vegetable mixture was coated with a mealworm and cricket mixture. This mixture or "sauce" consisted of seven chopped mealworms, ten chopped crickets, two tablespoons of water, and two teaspoons of flour, blended for 5 minutes on the "liquify" setting of the blender. The mealworm and cricket mixture was poured onto the vegetable mixture and presented as described previously.

**Tamarins' Food Preference, Continued**

**FIGURE 1: Mean ( $\pm$  standard error, SE) intake of cauliflower and broccoli by the tamarins during 3.5 hour tests. The vegetables were presented plain or sweetened with Karo® syrup on alternate days for a total of 3 comparisons ("trials").**



## Tamarins' Food Preference, *Continued*

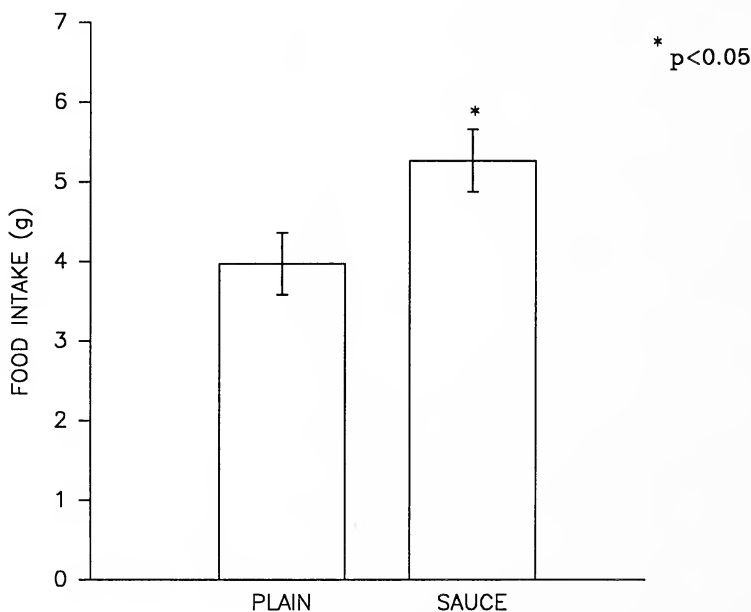
The two subjects were allowed access to the vegetable mixture for 3.5 hours on each day of the experiment. Each subject's food bowl was collected at 1530 hrs., any spillage was retrieved, and the remaining pieces of cauliflower and broccoli were weighed to the nearest 0.01 gram to determine the amount of each vegetable the subjects consumed. Data were analyzed with 2x3x3 analyses of variance, with the factors of: vegetable (broccoli vs. cauliflower); repeated trials (3 pairs of days); and sweetening (sweetened vs. plain); or coating (sauce vs. plain). The residual error term was used to test main effects at an alpha significant level of  $p < 0.05$ .

### Results

Figure 1 displays mean ( $\pm$  standard error, SE) intake of cauliflower and broccoli by the tamarins across three pairs of days ("trials"), during the 3.5 hour tests of the first experiment. Analysis of these data indicated a reliable preference for broccoli over cauliflower in these tamarins,  $F(1,16) = 6.58$ ,  $p < 0.05$ . The tamarins consistently consumed more broccoli than cauliflower across the three trials of the experiment. Neither the effect of trials nor of sweetening was reliable ( $p > 0.05$ ).

In the second experiment, the tamarins again reliably preferred broccoli to cauliflower,  $F(1, 11) = 7.04$ ,  $p < 0.05$ , and the effect of repeated trials across days 3-8 was not statistically significant ( $p > 0.05$ ). The effect of addition of cricket and worm sauce was reliable,  $F(1, 11) = 5.40$ ,  $p < 0.05$ , as the sauce produced a +32.6% increase in mean vegetable intake. This elevation of vegetable intake by meat coating is depicted in Figure 2. However, initial exposure to the sauce on the first day apparently elicited an initial neophobic avoidance.

Observations revealed that the tamarins consumed the vegetables along with the syrup or the sauce across days 3-8, and did not avoid the coatings, or merely lick the coating off the vegetables.



**FIGURE 2:** Mean ( $\pm$  SE) intake of cauliflower and broccoli coated with cricket and worm "sauce" or plain, during 3.5 hour tests. The vegetables were presented with or without sauce on alternate days for a total of 3 comparisons.

## Tamarins' Food Preference, *Continued*

### Discussion

Our findings do not support the idea that coating a vegetable with a sweet tasting substance, such as Karo® syrup, will reliably increase the intake of vegetables by Golden lion tamarins. However, several studies cited above have shown that other tamarins prefer sweet tastes in other testing situations. For example, Haefeli and Glaser (1984) found that many species in the Callitrichidae family preferred the sweet taste of xylitol to water. These findings are in contrast to the results we found using Karo® syrup as a sweet tasting substance to increase consumption of vegetables in the Golden lion tamarin. This discrepancy may reflect specific features of the design used to test preferences. Michael L. Power (1992) reported that when given a choice between fruits, insects, marmoset diet, and vegetables, the Golden lion tamarin consumed very little of the vegetables, but a large amount of mealworms and crickets. He concluded that the tamarin may self-select a nutritionally unbalanced diet when given a great number of food choices. He suggested mixing small quantities of preferred foods with nutritionally complete feeds to increase palatability. Our findings did support the idea that coating the vegetables with a mealworm and cricket mixture would increase the vegetable intake, across repeated exposures to choice testing.

Problems in maintenance and reproduction of Golden lion tamarins in captivity have been attributed to deficiencies in vegetable intake in a free-choice situation. Therefore, our data on the ability of a meat coating to elevate vegetable intake may prove applicable in improving the nutrition of the beautiful and severely endangered Golden lion tamarin, in captivity and reintroduction programs.

### Acknowledgments

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# FUNDING FALLS SHORT IN BID TO SAVE THE WORLD'S RHINOS

GLAND, Switzerland -- The crisis facing the world's rhinos is even more severe than predicted as Asian and African governments attending a UNEP meeting reported a dramatic increase in poaching and a lack of funding to help protect remaining rhino populations.

"Poaching is obviously prevalent in all populations of rhinos right now, except in Kenya and Namibia," said Jorgen Thomsen, Director of TRAFFIC, the wildlife trade monitoring programme of WWF-World Wide Fund For Nature. "This meeting was disappointing because the funds allocated for the immediate term are not sufficient to meet the emergency we have on our hands," he said at the close of the four-day meeting in Nairobi of the UN Conference Between the Rhinoceros Range States, Consumer States and Donors on the Financing of Conservation of the Rhinoceros.

In Zimbabwe, black rhinos have been reduced to less than 400 animals as a result of at least 50 poaching incidents in the past four months. Earlier this year, Zimbabwe ran out of money and had to discontinue its anti-poaching campaign.

In Indonesia, it is reported that the population of Sumatran rhinos, once believed to range between 700 and 900 animals, is now estimated at less than 400 because of poaching and continuing habitat destruction.

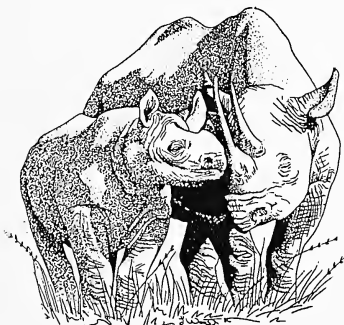
In India, more than 55 rhinos were poached this year in Manas and Kaziranga National Parks alone, hammering away at the 1,900 Indian rhinos left in the world. This is the worst poaching record for many years in India.

Governments estimate that US \$60 million is needed in emergency funds over the next three years. This is based on Country Action Plans and the IUCN Rhino Specialist Group's list of priorities for protecting the species. However, at the Gland meeting, only US \$4.9 million was pledged over the next 12 months.

"Donor countries are not contributing nearly enough money," said Mr. Thomsen. For many years, WWF has funded conservation projects, and its planned investment for the next 12 months of more than US \$2 million is the largest single contribution towards rhino conservation at this time.

While governments failed to pledge the necessary funds, they agreed to several resolutions. One resolution announced urges the Global Environment Facility (GEF) to make the whole rhino issue a top priority. The meeting also agreed to establish an Elephant and Rhino facility under UNEP.

>from *GreenDisk* July/August 1993



# Wild and Captive Populations of Rhino 1 September 1993

| <u>TAXON</u>                               | <u>WILD<br/>POPULATION</u> | <u>CAPTIVE<br/>POPULATION</u> |
|--|----------------------------|-------------------------------|
| Southwestern Black Rhino                   | 560                        | 0                             |
| Northwestern Black Rhino                   | 40                         | 0                             |
| Eastern Black Rhino                        | 500                        | 165                           |
| Southern Black Rhino                       | 1,400                      | 45                            |
| Northern White Rhino                       | +30                        | 9                             |
| Southern White Rhino                       | 5,700                      | +630                          |
| Indian/Nepalese Rhino                      | 2,000                      | 124                           |
| Javan Rhino                                | < 100                      | 0                             |
| Eastern Sumatran Rhino<br>(Borneo)         | 100                        | 5                             |
| Western Sumatran Rhino<br>(Sumatra/Malaya) | 700                        | 19                            |
| African Rhino Species                      | 8,100                      | 850                           |
| Asian Rhino Species                        | 2,900                      | 148                           |
| All Rhino Species                          | 11,000                     | 1,000                         |

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# Communal Behavior and Habitat Utilization Among Captive African Wild Dogs (*Lycaon pictus*)

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## Abstract

The communal behavior of adults and pups, and the utilization of the exhibit habitat were observed and measured in five (5) captive African wild dogs (*Lycaon pictus*) at the San Francisco Zoo. Results from the behavioral ethogram showed that the pack exhibited many cooperative species-typical behavior like den construction, greeting ceremonies, watching for food opportunity, social play, and regurgitation to pups. Results support the major hypothesis that affiliative behaviors among wild dogs are much more frequent than aggressive, submissive or solitary behaviors, and that the pack had selective preferences in their utilization of the exhibit areas which differs between the adults and pups. Behavioral comparisons between wild and captive African wild dogs are examined, and exhibit design is evaluated in light of these results.

## Introduction

Our current state of knowledge of the division of labor among mammalian carnivores observed from their communal rearing and cooperative hunting strategies, and their different and complex behavioral repertoires has been supplemented creditably by few, but extensive longitudinal studies of African wild dogs, restricted to the Serengeti plains of Tanzania (Estes and Goodard, 1967; Fanshawe, 1989; Frame and Frame, 1976; Kuhme, 1965; van Lawick, 1973; van Lawick-Goodall, 1970; Malcolm and Marten, 1982). Despite the wealth of detailed observations from these major field studies, more collaborative evidence from zoo environments would be useful in learning if any true species-typical behaviors, whether innate or learned, can apparently manifest themselves under the constraints of captivity.

Kuhme (1965), and Malcolm and Marten (1982) stressed that the communal treatment of food supply among wild dogs could be readily observed as a true division of labor. By functioning in the roles of dominant reproductive leader, hunter, and guard, all adult dogs contribute to the pack's inclusive fitness and reproductive survival through their provision of food to the pups, who are genetically related to all the pack members. The fact that all the adult dogs and most of the yearlings, immediately after a successful hunt, regurgitated meat back to the pups regardless of their social rank in five different packs analyzed by Malcolm and Marten (1982), confirms van Lawick-Goodall's (1970) assertion that regurgitation, as the method of providing food to the pups without attracting known scavengers like hyenas, is a strong instinct in all adult wild dogs to ensure the survival of the species.

Ritualized appeasement in the forms of neck presentations, face-licking, low tail-wagging with the ears flattened, and crouching or lying on one's back functioned to prevent or reduce aggression, and attain friendly social integration (Bueler, 1973; Schenkel, 1967). Overall group behaviors which enhanced the survival of the species had a selective advantage, therefore not surprisingly, cooperative social behaviors in the forms of hunting, greeting, feeding and protection of the pups, and play sessions were most prevalent throughout packs of wild dogs observed.

In light of previous ethological data which reported substantial agreement in the types of behaviors observed, the present study was implemented to supplement and compare data from field studies with that from a captive study which took place in a naturalistically

## African Wild Dog Study, *Continued*

enriched zoo environment. In short, this observational study was developed with two general goals in mind: 1) to supply empirical knowledge of the species-typical behaviors of African wild dogs by way of developing a behavioral ethogram, which could be compared to and evaluated against some former pack studies in the wild, and 2) to provide zoos with information concerning the types of captive behaviors observed, their relative frequencies, and overall landscape usage, that may assist in their long-term efforts to improve captive conditions by reconstructing their exhibit landscapes into more suitable, enriching habitats for wild dogs and other canids.

Regarding the behaviors of the group pack, adults, and pups, it was hypothesized that, 1) preferences for certain exhibit areas would occur at the pack level, and adults and pups would differ in their frequencies observed in exhibit areas; and 2) age would have a significant effect on behavior, such that adult dogs may spend more time resting while the pups would forage and play more often. Lastly, 3) the frequency of affiliative behaviors would dominate significantly over aggressive, submissive and solitary behaviors for the adults, pups, and the entire pack altogether, since parental care and hunting instincts in wild dogs demand them to be socially cooperative, even under the restraints of captivity.

### **Method**

#### *Subjects and Habitat*

The captive population sample consisted of five (5) African wild dogs (*Lycaon pictus*) housed at a naturalistically-enriched exhibit in the San Francisco Zoo: Jake, an 11-year-old adult male; Solo, a 2 1/2-year-old adult female; and their three (3) pups, Jobe, Lucas, and Sheba (2 males, 1 female respectively), all 9-months of age at the beginning of the four-week study.

The wild dog exhibit is approximately 3/4 of a dirt acre enclosed by a high wooden fence, which makes public visibility poor except from at the front viewing area, and a few peepholes along the fence. The somewhat hilly terrain contains several Eucalyptus trees, scattered masses of small twig trees, a houseshed with a bed of straw, and three dog-dug, probably interconnected dens.

#### *Procedure*

Data was recorded continuously at 10-minute blocks directly onto a *behavioral checklist*. A block-randomized *observation schedule* was used enabling each subject to be observed during as many different times of the day and during as many different days of the week as possible, so that the common systematic extraneous influences like excitement before feeding, peak public visiting hours, and diurnal afternoon and evening activity rhythms, would ideally affect all the dogs equally. To help control for the frequencies of certain behaviors in response to public distraction, the dogs were observed during weekdays, because larger crowds are mostly found at the zoo during the weekends.

Most observations (82%) were made from the late afternoon to sunset hours between 3:00-5:00 p.m., when activity levels were known to be high in wild dogs prior to evening hunting periods. Eighteen percent (18%) of the observations were made during 12:00-3:00 p.m., in the interest of detecting any remaining behaviors for the ethogram. The average observation period lasted 1 hour and 20 minutes, with a mode of 1 hour and 30 minutes ( $n = 16$  observation periods), comprising a total of 21 hours of observation during the course of the four-week study. Relatively equal proportions of observational time were given for each dog (Jake, 23%; Solo, 19%; Lucas, 19%; Sheba, 19%).

The mean crowd size was 26.4 visitors during a typical observation period. The distraction from visitors was usually low, or if medium to high the dogs rarely took notice of their movements or attention calls, and at most, public distraction added a small amount to the frequency of watch behaviors in the ethogram. The average outdoor weather was partly sunny and damp during mid-day and evening periods, and on one or two occasions, the weather could be described as completely overcast with no spots of sunlight.

## African Wild Dog Study, *Continued*

### Results

#### *Behavioral Contexts*

Since the survival of wild dogs demands them to be highly cooperative and social, it was not surprising that the frequency of affiliative behavior, at the pack level of 77% dominated significantly over aggressive acts (2%), submissive gestures (3%), and solitary behaviors (18%).

Acts of aggression, although very few in number, occurred when Jake, the old male, reprimanded a whining pup or his mate Solo, when much food had already been regurgitated, by means of a quick jaw snap, nip, or a sudden short charge. Aggressive behavior between the pups sometimes ensued from minor conflicts in rough play wrestling. Also when the pups followed the adults too closely, they received a gentle nip at the neck or muzzle in token punishment, at which they would usually turn submissively to greet the adults by licking their faces or rolling on their backs until the adults were satisfied and went about their business.

Solitary or nonsocial behavior encompassed behaviors like foraging, napping, and watching the public in the social absence of other dogs, and exploring dens, and scraps of wood and hay alone. Pack members that were somewhat idle, aloof, or inattentive to other members during a brief period of time, even when in close proximity to them, exhibited solitary behavior.

Group comparisons between adults and pups revealed that they did the same amount of affiliative, aggressive, and solitary behaviors, but almost all of the submissive gestures were observed from the pups alone,  $X^2(3, N = 498) = 11.56, p < .01$ , although the magnitude of the difference was weak, Cramer's  $V = 0.15$ . A comparison between all pack members yielded significant variation in the frequencies of these behaviors,  $X^2(12, N = 498) = 31.06, p < .002$ , Cramer's  $V = 0.14$ . Some other findings from this comparison were that Jake (50%) and the two male pups (50%) were responsible for all the aggressive instances recorded, and Jake and Sheba had the highest frequencies of solitary behavior (34% and 24%, respectively).

#### *Ethogram*

The following types of behaviors were observed during the four-week study

|                         |                             |
|-------------------------|-----------------------------|
| Aggressive Gestures: 2% | Greet/Greeting Ceremony: 6% |
| Beg/Whine: 2%           | Mark/Urinate: 0.2%          |
| Den Dig: 3%             | Play: 7%                    |
| Drink: 0.2%             | Regurgitate: 0.6%           |
| Eat: 7%                 | Rest: 20%                   |
| Explore/Forage: 29%     | Self-Groom: 1%              |
| Follow: 2%              | Watch: 20%                  |

The main differences between adults and pups were that, 1) the adults appeared to engage in watching the pack's activities and for the presence of keepers more so than the pups, whose attention was focused mainly among themselves or oriented towards the visitors, and 2) the pups spent twice as much time foraging, and over three times as much time playing and eating canine feed, hay or bark around the exhibit than the adults.

#### *Utilization of Habitat*

The pack preferred to utilize some exhibit areas more than other areas, and the adults and pups differed in their utilization of certain areas of the exhibit. During the study, the adults were mainly observed in the following areas: the center (33%), left back or house and rest spots along the fence (23%), and cage area (18%), during most observations recorded

## **African Wild Dog Study, Continued**

between 3:00 p.m. and 5:00 p.m. Similarly the pups during this time, also stayed frequently along the center (31%), where they played and explored the dens, but preferred the right front below the cement wall (23%), and the back areas of the exhibit (left, 18%; right 18%), where they foraged and rested.

Results indicated that the adults and pups mainly differed in their use of the exhibit areas in these ways,  $X^2(6, N = 498) = 39.61, p < .001$ , Cramer's  $V = 0.28: 1$ . Adults were more likely to stay in the cages and watch for the keeper, and 2) the pups stayed along the right exhibit end and slope more often than the adults. These notable preferences between the adults and the pups for certain areas of the habitat were evident during the study period with the exception of the last week,  $X^2(6, N = 77) = 8.78, p > .10, n.s.$  Individual variation with respect to preference for specific habitat areas was highly significant,  $X^2(24, N = 498) = 75.45, p < .001$ , although the effect size was small, Cramer's  $V = 0.19$ .

At the center of the exhibit, the pack in general brought evening meat or bones up to eat and play tugs of war over, explored and dug into the two dens, and begged Jake to regurgitate more meat. Although the pack seemed to show preference for certain exhibit areas during late afternoon and earlier evening hours, they did not by any means ignore the remaining areas, perhaps due to their nomadic instinct to hunt nine months out of the year when not in breeding (Fanshawe, 1989).

### **Discussion**

The fact that the species-typical behaviors of wild dogs such as greeting ceremonies, den exploration, and manner of social play could be readily observed in captivity where there is insufficient knowledge, and experience if any, of the survival tactics used in the wild lends evidence that the behaviors reported in the ethogram are to some extent instinctual, and can naturally be passed on to future offspring. Frequent instances of watch and rest behaviors at the packlevel during evening hours appeared to be a likely consequence of captive life. There should be no disagreement that hunting is the primary function of any free-ranging pack, but the skill becomes undermined in captive dogs, which have little choice but to actively watch and forage for food in substitution for this highly specialized skill.

It was reasoned that since social unity in hunting and the rearing of pups in wild dogs is vital to their survival, affiliative behaviors would dominate significantly over aggressive, submissive and solitary behaviors in the pack. This hypothesis was supported when results yielded a 77% pack frequency in friendly interactions. The second hypothesis was developed in asking: if the pups were more curious about exploring their habitat, would they rest less than the adults? The hypothesis that adult dogs would spend more time resting was not supported, but the hypothesis that the pups would forage and play more often was supported. Rest, if not out of pure boredom, appears to be important in maintaining health for more active behaviors in these wild dogs.

The hypothesis which predicted that the pack would prefer to utilize some exhibit areas more than other areas, and the adults and pups would differ in their utilization of certain areas of the exhibit, was supported. In addition, individual preferences for habitat areas were apparent besides those already noted between the adults and the pups. Perhaps individual preferences in habitat usage simply reflected the existence of unique personalities in animals as in humans. It should be suggested that versatile exhibit landscapes can provide more ample opportunities for exploration in captive wild dogs, and should be designed not only to replicate natural open-spaced savanna areas, but in keeping individual preferences also in mind.

Future observational research in evaluating captive behaviors against those seen in the wild, or noting what aspects of exhibit design work or fail to produce significant activity in a species would be valuable in maintaining healthy zoo animals. Healthy animals are usually active ones which often are better appreciated by the public. Likability of a species then may help to promote the important message that only with public understanding of the endangerment of so many species can we stop the destruction of such highly skilled and

## African Wild Dog Study, *Continued*

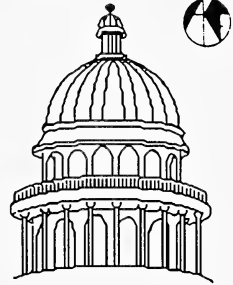
social species like the African wild dog - a valuable predator with no threat to man, that remains presently vulnerable to disease infestation encompassing areas of its large African home range.

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# Legislative Outlook

*Compiled by*  
*Phyllis Nilson-Wojcik*  
*Legislative Advisor*



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## "Taking" Issue Gaining Great Concern from Environmentalists

Property rights are being redefined by some groups in a radical way to further their own personal gain at the expense of public health and safety. Representative Billy Tauzin (D-TX) is gaining momentum with his H.R. 1490, amendment to the Endangered Species Act, which would make the government pay an individual or corporation if the ESA "substantially deprives a property owner of the economically viable use" of his or her property. As stated in the Fifth Amendment, a citizen is paid compensation if he suffers an unconstitutional "taking". However, many of the "takings" bills state that property owners would not have to comply with existing laws, laws that were established for the health and safety of all of us, as well as the environment, unless they are paid - by the taxpayer. This may even include zoning restrictions, so an individual may get paid to NOT build a landfill in your residential backyard.

Bruce Babbitt, the Secretary of the Interior's priority is to pass the National Biological Survey (NBS) Act of 1993 (H.E. 1845). This bill authorizes a survey of plants and animal species throughout the United States in a effort to identify important biological resources at the ecosystem level. However, Tauzin is attempting to place a "taking" amendment onto it. In July, he first tried to add an amendment that would have allowed property owners to force the government to purchase their land if information developed by the Survey were used in certain decisions which caused the decrease of the property value by fifty percent. At that point it was in the Merchant Marine and Fisheries Committee, which tabled talks on the amendment because it was "not germane" to the NBS bill. Representative Tauzin still intends to bring another "takings" amendment when the full House takes up the bill, which should be by mid-October. >*National Audubon Society Fact Sheet, September 1993*

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## **Pressure of Possible Sanctions Prompts South Korea to Join CITES**

After six years of international pressure, South Korea joined the Convention on International Trade in Endangered Species (CITES) in early July of this year. By joining CITES, the South Koreans have taken a major step toward halting illegal wildlife trade and saving endangered species, such as rhino and tiger, that are traded for medicinal uses in that country.

Along with Japan, Taiwan, and the United States, Korea is one of the world's top consumers of wildlife products like furs and skins, and is one of the last of the major wildlife consuming countries to join the 120-member nation wildlife conservation agreement. World Wildlife Fund (WWF) has been lobbying Korea since 1986 to join CITES.

The threat of U.S. trade sanctions against Korea, and pressure from the CITES Standing Committee may have hastened the decision. Last November, World Wildlife Fund and the National Wildlife Federation petitioned the U.S. government under the Pelly Amendment to impose sanctions on South Korea, China, Taiwan, and the Republic of Yemen because these countries were doing little to control the illegal trade in rhino horn. In June, the Interior Department announced the likelihood of sanctions on Taiwan and China and made it clear that the USFWS would be closely monitoring Korea and Yemen.

A WWF TRAFFIC investigation currently underway has revealed that the rhino horn trade is still an active part of Korea's traditional medicinal practices despite a national prohibition on the trade. TRAFFIC intends to work in the medical and pharmaceutical communities on educational efforts to inform medical practitioners and patients of the legal and conservation problems associated with the use of endangered species products from rhinos and tigers. Because these practices have been going on for centuries, overcoming the cultural barriers will be difficult and require an intensive and carefully crafted educational program.

Although WWF applauded Korea's move to join CITES, WWF Senior VP James P. Leaps expressed concern over the country's intention to continue trading in some endangered species, namely the musk deer and certain bear species. Musk deer and bear parts, such as gallbladders, paws, and scent glands, are also used in the Asian medicinal trade. Korea has promised to phase out trade in these species within three years, but WWF is urging swifter action to eliminate this destructive commerce.

*>Excerpted in part from World Wildlife Fund's **FOCUS**, Vol. 15, No. 5, Sept./Oct. 1993*

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## **US/Canada Work Together on Migratory Bird Subsistence Hunting Issue**

The USFWS is drafting an environmental assessment aimed at resolving conflicts arising from the subsistence hunting of migratory birds in Alaska. Subsistence hunters in far northern areas traditionally harvest ducks, geese, cranes, and sea birds. In Alaska, this subsistence activity occurs mainly during the spring and summer. In the northern and western portions of the state few waterfowl are available at other times of the year. In northern Canada a comparable situation exists.

According to the Service's Alaska Regional Director Walter O. Stieglitz, spring/summer hunting conflicts with the closed season provisions of the 1916 Migratory Bird Convention between the U.S. and Canada. Currently the Convention calls for a period closed to all migratory bird hunting between 10 March and 1 September, with a few exceptions. Subsistence hunters say restricting their activities during spring denies them fair access and traditional and customary use of the migratory bird resources. Many of these subsistence hunters are Native Alaskans who contend their traditional harvest violates a law they had no voice in developing.

## **Legislative Outlook.** *Continued*

Other waterfowl users fear subsistence hunters may deplete the resource, which they say could result in reduced hunting for sport hunters. Subsistence hunting in Alaska currently accounts for about 5.5% of the total sport harvest of ducks and geese in North America. The Service is recommending an amendment to the Convention which would allow a carefully regulated subsistence hunt during part of the currently closed period.

*>Excerpted from Dept. of the Interior News Release, September 13, 1993*

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### **Arctic Peregrine Falcon Proposed for ESA Delisting**

Only 20 years ago, one of the world's fastest birds, the Peregrine Falcon, was thought to be destined for extinction. Today, prompted by the bird's steady progress toward recovery, the USFWS is proposing to remove the Arctic peregrine falcon, a northern subspecies, from the Endangered Species List. The proposal applies to Peregrine falcons nesting in arctic areas of Alaska, Canada and Greenland. These birds, currently classified as threatened, represent about 75% of all Peregrines in North America. USFWS biologists note that endangered Peregrines in other regions are also improving and may soon be proposed for reclassification. Peregrine falcons have been protected under the ESA since 1973.

If the decision is made to remove the Arctic peregrine falcon from the List, an intensive 5-year monitoring program to ensure populations continue to improve or remain stable will be implemented. If necessary, the Service can take emergency action to return the species to the List.

*>Excerpted from Dept. of the Interior News Release, October 8, 1993*

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### **Additions to Five Wetlands Refuges Approved/Receive Grant Funding**

Secretary of the Interior Bruce Babbitt has announced approval by the Migratory Bird Conservation Commission of additions to five national wildlife refuges, as well as \$11.3 million in grants from the North American Wetlands Conservation Fund in Canada, Mexico, and the U.S. The Cabinet-level Commission approved refuge purchase of 204 acres at Overflow National Wildlife Refuge (NWR) in Arkansas; 950 acres in easements at Butte Sink Wildlife Management Area in California; 11,440 acres at McFaddin NWR, Texas; 329 acres at Bear River Migratory Bird Refuge in Utah; and 102 acres at Missisquoi NWR, Vermont.

The \$11.3 million in grants approved by the Commission from the North American Wetlands Conservation Fund were complemented by \$18 million from grantees and other partners. Grants of \$3,514,520.00 were awarded to Canada for 11 wetlands conservation projects to protect and improve 47,865 acres, while a \$41,570.00 grant in Mexico will be used to develop management plans for two coastal wetlands in the State of Sonora. In the U.S., 14 projects received grants totalling \$7.8 million to protect and restore some of the nation's most important wetland ecosystems providing habitat for a wide diversity of species. All 14 projects will benefit State or Federally listed threatened or endangered species, ranging from the Gray wolf and Bald eagle in Michigan to the Piping plover in Massachusetts.

Funding for the North American Wetlands Conservation Fund comes from appropriations and accumulated interest generated by the Pittman-Robertson Trust Fund, and fines and forfeitures collected from Migratory Bird Treaty Act violations. Projects are recommended to the Migratory Bird Conservation Commission by a nine-member, public and private Council established by legislature and appointed by the Secretary of the Interior.

*>Excerpted from Dept. of the Interior News Release, Sept. 24, 1993*



# Chapter News

## Tucson Chapter AAZK

New officers for the Tucson Chapter are:

President.....Michelle Acuna  
Vice President.....Kim Smith  
Treasurer.....Dee Nelson  
Secretary.....Bruce Eneboe  
Liaison.....Nancy Biggins-Adams

Forty-nine bowlers participated in our (Bowling for Rhinos" event in 1993, raising over \$1900.00 and making our most successful BFR yet. We are already looking forward to, and are beginning to plan for 1994's event.

In September, Michelle Acuna, Chapter member, gave a very informative presentation on the First Conference on Environmental Enrichment which she attended in July of this year in Portland, OR. Along with Kayla Grams, Topeka Zoo and Gretchen Ziegler, Wildlife Safari, Michelle will be presenting an Environmental Enrichment Workshop at the Atlanta Conference.

--Nancy Biggins-Adams, Liaison

## San Diego Chapter

In our September general meeting we were treated to a lecture about the disappearing wetlands of our own San Diego County by Barbara Moore, the Assistant Director of the Chula Vista Nature Center. At the Chula Vista Nature Center, Barbara is working along with other groups to encourage wetland habitat restoration and maintenance, and education of local school children about native wetlands.

She told us about local programs to increase the native population of Abalone, the endangered Clapper Rail, and Burrowing Owls. The Nature Center even has an on-site greenhouse where volunteers are trying to grow saltmarsh plants to be reintroduced into disturbed wetland areas. Barbara reminded us that it's not just the cute and cuddly animals that need to be saved. She stressed that even animals as

aesthetically unappealing as the Fat Inkeeper Worm are part of the wetland ecosystem, and that it is all the species and the biozome as a whole that needs to be preserved.

Although Sweetwater Marsh is the last remaining saltmarsh along San Diego Bay, the volunteers and staff of the Chula Vista Nature Center are working hard to preserve their last local wetland.

In an effort to increase our own Chapter membership, we are giving a four-month trial membership to existing members of AAZK National. Those qualified should send relevant information to the San Diego Chapter of AAZK, c/o the San Diego Zoo, P.O. Box 551, San Diego, CA 92112.

--Christine Simmons, Liaison

## Central Illinois Chapter AAZK

The Central Illinois Chapter of the AAZK held a fundraiser on 15 October to raise money to build a new exhibit for our Himilayan Black Bears, BooBoo and Mandy. The theme for the event was a Wildlife Safari entitled "Walk on the Wild Side With BooBoo and Mandy".

We were fortunate to have Brenda Edgar, the wife of Illinois Governor Jim Edgar, as our Honorary Chairperson. Committees including Invitations, Publicity, Grounds, Sales, Donations and Reception were formed to coordinate the event. Our corporate sponsor was Bank One of Springfield. Food was donated from local restaurants and clubs. Beverages, tents, tables, chairs and the printing of the invitations was also donated.

Approximately one thousand invitations were sent and we anticipated an attendance of around 500. Guests were able to choose from several donation amounts ranging from \$25.00 to \$100.00+ to attend this event. Guests were able to purchase shirts and small plush bears, along with personalized, engraved bricks that will line the walkway to the new exhibit.

We'll let you all know how our big event came out in our next report to Chapter News.

--Susan Lynch, President



## Chapter News, Continued

### Puget Sound Chapter AAZK

At our August meeting Gary Mozel gave a wonderful tour of the Northwest Trail exhibit which, when completed, will be superb. Harmony Frazier-Taylor and Linda Shipe scaled a concrete structure (intended eventually for the bears' exercise) in preparation for their trip to upper British Columbia to study grizzlies. Harmony needed to get a "feel" for how far 20 feet is as she'd been told that's all the farther she would need to climb to get away from a pursuing bear!

The Chapter has voted to contribute \$500.00 toward the costs of the special notebook covers for the Zoo Infant Development Project. The money will come from the proceeds of the auction to be held this fall. Harmony is Coordinator for this important AAZK project.

Chapter member Sean Schmidt and three other University of Washington students are going to Russia to do their senior thesis, evaluating the zoos there and comparing them to U.S. zoos. The Tahoma AAZK Chapter donated \$1200.00 to this study and the Puget Sound Chapter has also designated \$300.00 from its Conservation Fund to assist in the survey.

--Marilyn Martinez, Secretary

### AAZK of the Pikes Peak Region Colorado Springs, CO

Officers for the Chapter are:

President.....Andrea Bernee  
Vice Pres.....Dennis Cordier  
Secretary.....Karen Wilkenson  
Treasurer.....Catherine Youchis  
Chapter Liaison.....Tracey Anderson

Our Chapter is very busy trying to organize our new officers. One of our current fund-raising projects is trying to hold a monthly bake sale at zoo special events. The money from these sales will be donated to various local organizations supporting conservation. We are also trying to hold a monthly raffle with the money going to keeping the ongoing prizes interesting. We are also recycling aluminum for our animal enrichment fund.



Our friends at Pigment Productions have designed a new hot snake logo for our reptile department and the response to the logo on a shirt was so overwhelming that we decided to make them available on a one-time basis. The short-sleeved 50/50 shirts are red with black logo on the back (see insert); on the front pocket it will say Hot Snake Crew. They are available in adult sizes S, M, L, and XL. The cost is \$15.00 each which includes S&H and they will be available by the holidays. Please allow 6-8 weeks for delivery. Group orders welcome. Contact Andrea Bernee (719) 633-9925, AAZK of the Pikes Peak Region, c/o Cheyenne Mountain Zoo, 4250 Cheyenne Mountain Zoo Road, Colorado Springs, CO 80906.

--Andrea Bernee, President

### Bergen County Regional AAZK Chapter

Once again this year our Chapter hosted "Bowling for Rhinos". This event has become very popular and this year drew over 80 bowlers. We raised over \$1550.00 in pledges, donations and everyone had a great time!

In June, our Chapter hosted a booth at the Bergen County Zoo's annual Conservation Day. We sold Rainforest Crunch® bars and popcorn as usual, but

## Chapter News, *Continued*

this year we added face painting to our activities. Anyone having their face painted was asked to make a donation to our Conservation Parking Meter. Most of the keeper staff helped out, which resulted in some creative faces wandering around the zoo. Our Meter continues to be successful, and has raised over \$5300.00 to date.

We also participated in our annual Zoo Boo which was held October 29 & 30. Our Chapter sponsored one of the trick-or-treat stations in the zoo during these two evenings.

--Cindy Norton, President



## **AAZK Announces New Professional/Contributing Members**

- |  |  |
|--|--|
| Jean Paul Therien, Capron Park Zoo (MA)  | Gary A. Whiting, Capron Park Zoo (MA)      |
| Deborah Bellinger, New England Sci. Cntr. (MA)                                       | Thomas Allegrezza, Southwick's zoo (MA)    |
| Carol Ann Gaffney, Franklin Park Zoo (MA)  | Kevin M. Riley, Capron Park Zoo (MA)       |
| Paul McCaffrey, Capron Park Zoo (MA)   | Colleen Tobin, York's Wild Kingdom (ME)    |
| Kelley Bollen, Burnet Park Zoo (NY)  | David McCutcheon, Mill Mt. Zool. Prk. (VA) |
| Stacia Leigh Daniels, Santa Fe Teaching Zoo (FL)                                     | Toni Brough, Miami Metrozoo (FL)           |
| Christina Breder, Miami Metrozoo (FL)  | Kathy Hitchcock, Miami Metrozoo (FL)       |
| Lavongia R. Henry, Miami Metrozoo (FL)   | Ben Graffam, Lowry Park Zoo (FL)           |
| Tracy Boyle, Busch Gardens (FL)  | David C. Rivers, Busch Gardens (FL)        |
| Nina M. Neal, Parrot Jungle (FL)   | Charles Jenkins, Marion Nature Park (FL)   |
| Jessee Durham, Silver Springs Wildlife Prk. (FL)                                     | Peter McManus, Weeki Wachee Spgs. (FL)     |
| Judi B. Tracy, Zooland Animal Park (AL)  | Carol Sodaro, Brookfield Zoo (IL)          |
| Brad Whitlow, Grindstone Valley Zoo (IL)   | Ira Leonard, Little Rock Zoo (AR)          |
| Theresa Withrow, Out of Africa Wildlife Prk. (AZ)                                    | Charla Dawson, Pueblo Zoo (CO)             |
| Debra Espinoza-Bylin, San Diego WAP (CA)   | Karla Michelson, San Diego WAP (CA)        |
| Janet Hawes, San Diego Zoo (CA)  | Julia Parker, Santa Barbara Zoo (CA)       |
| Scott T. Harris, Wildlife Safari (OR)  |  |
| Jeff Gerenoser, Station for the Breeding of Indigenous Wildlife, Uruguay, S. America |  |

### **New Contributing Members**

Dan Kohl, The Larson Company, Tucson, Arizona

### **Renewing Contributing Members**

Bruce M. Thomas, Takoma Park, Maryland  
Jack Brown, Director, SFCC Teaching Zoo, Gainesville, Florida  
Angela Superczynski, Hometown, Illinois  
Martine Colette, Wildlife Waystation, Angeles Forest, California  
William H. Disher, San Diego, California





# Book Review

## An Introduction to Tropical Rain Forests

By T.C. Whitmore

Oxford University Press, 1990

New York, NY

226 pgs., B&W photos, figures, drawings

*Review by Michael Demlong*

*Senior Exhibit Technician*

*Phoenix Zoo, Phoenix, AZ*

“...We rush around like demented; in the first three days were unable to classify anything; we pick up one object to throw it away for the next. Bonpland keeps telling me he will get mad if the wonders do not cease.”

This quote from Alexander von Humboldt in 1799, illustrates the excitement of these two men while exploring a neotropical rain forest in Venezuela. Hopefully, future generations will be able to experience similar emotions rather than try to forgive us for failing to preserve tropical rain forests (TRF) and other tropical ecosystems in peril today.

The media reminds us daily of the plight of TRF as vast tracks of virgin forest are consumed for food crops, livestock pasture, homes, roadways, and mining. At the same time, it introduced us to individuals who battle to preserve tropical ecosystems so that future generations too may marvel, and benefit, from the species living within. T.C. Whitmore, a prominent tropical ecologist, advocates a balance somewhere between the two extremes of complete consumption and complete preservation. He is a proponent of the view that TRF are a renewable resource, provided that humans understand, and work within, the natural dynamics of the forest as exemplified by the native people who have lived in harmony with TRF for a millennium.

In his softcover book, An Introduction to Tropical Rain Forests, Whitmore attempts to introduce TRF to the world's populace, the individuals who ultimately can save TRF. Whitmore begins his book by describing what TRF are, the flora and fauna found therein, species interactions, and how man affects these unique ecosystems. Although he presents examples from tropical rain forests worldwide, the majority came from Malaya where he has conducted research.

Almost every page of Whitmore's book contains one or more black and white photos, illustrations, figures, or tables relating to TRF. The photos are wholly utilitarian, illustrating points like plant height, morphological characteristics, or sometimes scenery; this work is definitely not intended as a coffee table book. The figures, too, are utilitarian, most borrowed from previously published papers. Some are easily interpreted, but many more are difficult to comprehend and not designed for his intended "broad" audience. The utilitarian nature of the visual material, in combination with a somewhat dry text, makes An Introduction to Tropical Rain Forests read like a textbook. That is not necessarily bad, if what you are looking for is a book of facts or a text to accompany an academic course. Whitmore's book would make an excellent text for a high school or undergraduate college tropical biology course. Each chapter, for example, is subtitled into smaller sections, followed by a comprehensive summary at the end of each chapter. A glossary in the rear of the book will help non-biologists and biologists wade through the scientific jargon. Expect to use it frequently.

If you are an educator - at any grade level - discussing the beauty and uniqueness of the tropical rain forest and/or the need for its conservation or a naturalist interested in tropical ecology, this is a book for you. Graphic designers or zoo guides/interpreters would benefit too from reading this book for interesting tidbits on tropical rain forests to punctuate tours or copy. However, if you are a caregiver looking for additional information on the care of a particular rain forest species in your care, look elsewhere.

**Neotropical Wildlife Use and Conservation**

Edited by John G. Robinson and Kent H. Redford - 1991

University of Chicago Press, 5801 S. Ellis Ave., Chicago, IL 60637

*Review By Marilyn Cole*

*Senior Keeper, Americas*

*Metro Toronto Zoo, Toronto, Ont., Canada*

Raising iguanas for food in Costa Rica? Commercial hunting of capybaras in Venezuela? Raising tegu lizards for leather in Argentina? Some might say, where does it all end? These are but a few of the many topics regarding wildlife management that are covered in this interesting book. Many may be horrified to read of the various initiatives for utilizing wildlife in South and Central America, but the hard realistic facts put forth by the various authors are that, in order to save and protect many wildlife species it is better to manage them through legal culling, or else captive breeding programs.

In the case of the former, Francisco Dallmeier advocates the hunting of whistling ducks as a means of reducing the damage these birds do to rice crops while at the same time, providing an important source of protein to the rural indigenous people of Venezuela. His study set out to determine the impact of the ducks on the rice harvest, as well as the impact of sport hunting on the duck population. He has gathered together some impressive statistics to support his contention that hunting is an important management tool to control the destruction caused by ducks on the local rice crop, but concludes that "A better control of bag limits, pesticide use and poaching is also necessary."

In another chapter, authors William L. Franklin and Michael A. Fritz boldly state that "We are now entering an era of wildlife conservation and management in Latin American countries that dictates a 'use it or lose it' philosophy. In other words, if an animal isn't useful to humans, then its fate is sealed. There is certainly a lot of truth to this statement, but I still personally hold out hope that we can admire wildlife for its own innate beauty and unique qualities, quite apart from what use we can make out of it. Nevertheless, it is hard to refute their rationale for scientifically managed harvest of the South American guanaco. The numbers are declining rapidly through indiscriminate hunting, particularly of newborns whose skin is considered to be quite valuable. The meat is sold for three times that of beef in Chile. Franklin and Fritz advocate a systematic culling program in which the surplus males are harvested, and insist that it is not too late to initiate such a program. Given the current situation in which all sexes and ages are indiscriminately hunted, their arguments for a sustainable harvest make a lot of sense.

Dagmar Werner, a German-born woman who lives in Costa Rica, has become quite famous, and is known locally as "the Iguana Lady". She initiated the captive breeding of these lizards, which were fast being annihilated by the locals through hunting and destruction of their habitat. Werner set out to explore the possibility of managing these lizards so that not only would there be a food supply available, but also live iguanas to restock wild areas. She managed to develop her enterprise into a paying concern, as well as promoting conservation with the local school children who assist her in releasing young iguanas into specified areas.

Another aspect that this book covers is the growing area of nature tourism as a means of sustainable development for Latin American countries. Some success stories are mentioned whereby natural areas were preserved, but still provided economic benefit for the residents through the means of attracting tourists to come to see the natural beauties, and to pay for the privilege. This is an area that will probably become more and more important in the future in terms of reasons for conserving wild areas, instead of exploiting them for the timber or wildlife found within.

All in all, this book offers some thought-provoking information. You may not necessarily agree with some of the projects suggested, but it will certainly provide room for discussion. This type of book is useful to put into perspective the problems that many developing nations encounter as they struggle with the need for economic growth balanced against the desire to preserve and protect their natural areas.



# BOOK SALE

*The Beardsley Zoo Chapter of the American Association of Zoo Keepers offers these discounted books for sale as part of their fund-raising efforts towards conservation projects. Prices listed are 10-20% off publisher's list prices.*

**My Nature Craft Book** by Cheryl Owen. Full-color photographs and drawings make these 35 projects appealing and fun. 96 pgs., hardcover, ages 7-11. Price \$14.95.

**Welcome to the Greenhouse** by Jane Yolen. The author of Owl Moon invites children to a tropical rainforest. 96 pgs., hardcover, ages 4-8. Price \$14.95.

**The Last Panda** by George B. Schaller. Observations in the wild, plus a disturbing account of good intentions gone wrong. 352 pgs. Hardcover. Price \$24.95.

**The Creepy Crawlers and The Scientific Method** by Sally Stenhouse Kneidel. Over 100 hands-on science experiments involving insects and other crawling creatures. 224 pgs. Price \$15.95.

**Night Creatures** by Susanne Santoro Whyne. An informative and beautiful look at the creatures who inhabit the night. 48 pgs., ages 7-12. Price \$15.00.

**Wildflower Folklore.** Paperback, Price \$16.95.

**EcoArt!** Paperback. Price \$12.95.

**A is for Animals.** An animal ABC pop-up book for the young reader. Price \$15.95.

**Guide to the National Wildlife Refuges.** Paperback. Price \$16.00

**A River Runs Through It** by Norman Maclean. The great classic of trout, rivers and philosophy. 217 pgs. paperback. Price \$9.95.

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## English Zoo Animals Living 'High on the Gourmet Hog'

The Associated Press has reported that animals at a zoo in southern England have developed a taste for the good life after a sandwich maker started donating leftovers with gourmet fillings.

"We are more like the Savoy than a sanctuary," said Jack Corney, director of the Isle of Wight Zoo, referring to one of London's best restaurants.

Cleo the camel won't eat anything except smoked salmon sandwiches anymore. The Vietnamese potbellied pig favors prawns and mayonnaise.

"The llamas are into chicken tikka and, as for the goats, they turn their noses up at anything except duck pate -- but even then it has got to be on brown bread," Corney said.

"How do you think I feel handing over a smoked salmon sandwich to a camel? I haven't had smoked salmon in years," he said.

The camel used to eat hay, straw, sugar beets and pulp pellets. "She turns up her nose at it now. She just waits at the gate for the smoked salmon sandwiches. Thank God they are free, otherwise I would never be able to pay for their feed."



# L.I.N.K.

## (Liaison and Information Network for Keepers)

Coordinator for the LINK System: Mark de Denus, Assiniboine Park Zoo, 2355 Corydon Ave., Winnipeg, Manitoba, Canada R3P 0R5. (204) 986-6921 [w]; (204) 837-2916 [h]

### Regional Coordinators

**ALABAMA** - Fred Alvey, Zoo Atlanta, 800 Cherokee Ave. S.E., Atlanta, GA 30315

**ALASKA** - Vacancy

**ARIZONA** - Bruce Eneboe, Reid Park Zoo, 1100 S. Randolph Way, Tucson, AZ 85716

**ARKANSAS** - Debbie Jackson or Ann Rademacher, Little Rock Zoological Gardens,  
#1 Jonesboro Dr., Little Rock, AR 72205

**CALIFORNIA (Northern)** - Jean Lai, Oakland Zoo, 9777 Golf Links Rd., Oakland, CA 94605 and

Ruby Lara, Sacramento Zoo, 3930 West Land Park Dr., Sacramento, CA 95822-1123

**CALIFORNIA (Southern)** - Johnny Merk, EFBC, HCR #1, Box 84, Rosamond, CA 93560

**COLORADO** - Suzanne Chacon-Brennan, Denver Zoo, City Park, Denver, CO 80205

**CONNECTICUT** - Jeanette Nadeau, Roger Williams Park Zoo, Providence, RI 02905

**DELEWARE** - Theresa Maas, Philadelphia Zoo, 34th & Girard Ave., Philadelphia, PA 19104

**FLORIDA** - Rick Smith, 5752 Stoneridge, Orlando, FL 32839

**GEORGIA** - Fred Alvey, Zoo Atlanta, 800 Cherokee Ave. S.E., Atlanta, GA 30315

**HAWAII** - Vacancy

**IDAHO** - Vacancy

**ILLINOIS** - Pat Swieca, 5710 W. Cullom Ave., Chicago, IL 60634

**INDIANA** - Vacancy

**IOWA** - Carla Wieser, Omaha's Henry Doorly Zoo, 10th St. & Deer Park Blvd., Omaha, NE 68107

**KANSAS** - Vacancy

**KENTUCKY** - Scott Wright, Cleveland Metroparks Zoo, 3900 Brookside Park Dr., Cleveland, OH 44109

**LOUISIANA** - Vacancy

**MAINE** - Jeanette Nadeau (see addresses under CT)

**MARYLAND** - Theresa Maas, Philadelphia Zoo, 34th & Girard Ave., Philadelphia, PA

**MASSACHUSETTS** - Jeanette Nadeau (see addresses under CT)

**MICHIGAN** - Vacancy

**MINNESOTA** - Tim Hill, Minnesota Zoological Gardens, 13000 Zoo Blvd., Apple Valley, MN 55124

**MISSISSIPPI** - Jeannie Frazier, Jackson Zoological Park, 2918 W. Capitol, Jackson, MS 39209

**MISSOURI** - Vacancy

**MONTANA** - Vacancy

**NEBRASKA** - Carla Wieser (see address under Iowa)

**NEVADA** - Patricia Simonet, Wildlife Safaris, P.O. Box 6735, Incline Village, NV 89450

**NEW HAMPSHIRE** - Jeanette Nadeau (see addresses under CT)

**NEW JERSEY** - Frank Leonard, Bronx Zoo, 185th & Southern Blvd., Bronx, NY 10460

**NEW MEXICO** - Bruce Eneboe, Reid Park Zoo, 1100 S. Randolph Way, Tucson, AZ 857716

**EAST NEW YORK** - Frank Leonard, Bronx Zoo, 185th & Southern Blvd., Bronx, NY 10460

**WEST NEW YORK** - Alan Baker, Burnet Park Zoo, 500 Burnet Park Dr., Syracuse, NY 13204

**NORTH CAROLINA** - Lucy Segerson, North Carolina Zoo, Rt. 4, Box 83, Asheboro, NC 27203

**NORTH DAKOTA** - Bob Debets, Assiniboine Park Zoo, 2355 Corydon Ave., Winnipeg, Manitoba  
Canada R3P 0R5 (204) 986-4040 [w]

**OHIO** - Scott Wright, Cleveland Metroparks Zoo, 3900 Brookside Park Dr., Cleveland, OH 44109

**OKLAHOMA** - Debbie Jackson or Ann Rademacher (see addresses under AR)

**OREGON** - Anna Michel, Washington Park Zoo, 4001 SW Canyon Rd., Portland, OR 97221

**PENNSYLVANIA** - Theresa Maas, Philadelphia Zoo, 3400 W. Girard, Philadelphia, PA 19104

**RHODE ISLAND** - Jeanette Nadeau (see addresses under CT)

**SOUTH CAROLINA** - Lucy Segerson, North Carolina Zoo, Rt. 4, Box 83, Asheboro, NC 27203

**SOUTH DAKOTA** - Bob Debets (see address under ND)

**TENNESSEE** - Gail Karr or Cindy Pinger, Memphis Zoo & Aquarium, 2000 Galloway, Memphis, TN 38112

**TEXAS** - Ann Marie Greco, 5903 Danny Kaye #2104, San Antonio, TX 78240

**UTAH** - Suzanne Chacon-Brennan, Denver Zoo, City Park, Denver, CO 80205

**VERMONT** - Jeanette Nadeau (see addresses under CT)

**VIRGINIA** - Theresa Maas, Philadelphia Zoo, 34th & Girard, Philadelphia, PA 19104

**WASHINGTON** - Elandra Aum, Woodland Park Zoo, 5500 Phinney Ave. N, Seattle, WA 98103

**WEST VIRGINIA** - Theresa Maas, Philadelphia Zoo, 34th & Girard, Philadelphia, PA 19104

**WISCONSIN** - Wayne Hazlett, 3768 S. 89th St., Milwaukee, WI 53228

**WYOMING** - Vacancy

**DISTRICT OF COLUMBIA** - Theresa Maas (see address under PA)

**Province of Ontario** - Vacancy

**Provinces of Manitoba & Saskatchewan** - Bob Debets (see address under ND)

**Province of Quebec** - Vacancy

**Provinces of Alberta & British Columbia** - Grant Tkachuk, 10139 157th St., #206, Edmonton, Alberta T5P 2T9

*Institutions wishing to advertise employment opportunities are asked to send pertinent data by the 15th of each month to: Opportunity Knocks/AKE, 635 Gage Blvd., Topeka, KS 66606. Please include closing dates for positions available. There is no charge for this service and phone-in listings of positions which become available close to deadline are accepted. Our phone is 1-800-242-4519 (U.S.); 1-800-468-1966 (Canada). Our FAX is 913-273-1980.*

**ZOO ANIMAL KEEPER 6**...openings now exist at the Dallas Zoo for Zoo Animal Keepers who are well versed in exotic mammal biology. Duties include feeding, cleaning, observations of behavior, exhibit design/construction, assisting in zoo research, and veterinary procedures. Applicants should possess a strong background in Zoology. Starting salary ranges from \$13,704.00-\$15,888.00 annually. Qualified applicants should have at least a high school diploma or equivalent and one year experience in animal care and feeding. Additional education and experience are strongly recommended. Position is subject to drug and alcohol testing. Individuals interested in this position should submit an application\* and may attach a resume by **15 November 1993** to: Mammal Dept. Personnel, Dallas Zoo, 621 East Clarendon Drive, Dallas, TX 75203, EOE, M/F/H. ( Please indicate on your application that you are applying for the Mammal Dept. Zoo Animal Keeper 6 positions at the Dallas Zoo.) \*Please call 214-670-6833 for an application form.

The following two (2) positions are available at the Kansas City Zoo, Kansas City, MO. Both positions will participate in maintaining and exhibiting a diverse animal collection; development and implementation of public programs; and direct supervision of zookeeper staff. Nonresidents, if appointed, must establish residency within the city limits of Kansas City, MO. Salary is \$1,489.00 to \$2,472.00 per month plus excellent employee benefits. Send resume by **30 December 1993** to: Reta Gaebler, 414 E. 12th St., 12th Floor, City Hall, Kansas City, MO 64106 EOE/ME/D.

**ANIMAL TECHNICIAN/SUPERVISOR**...requires an accredited Associate degree in life science; 2 years' experience in zoo animal husbandry and exhibition; bird experience desirable; supervisory experience in an animal related capacity preferred.

**ANIMAL TECHNICIAN/ELEPHANT MANAGER**...requires an accredited Associate degree in life science; 2 years' experience in elephant management; and supervisory experience in an animal related capacity.

**OSTRICH RANCH MANAGER**...accepting resumes for an Ostrich/Exotic bird ranch manager with possibilities for a working partnership, dependent upon experience. Qualifications are experience in hatching, brooding, dietary supplements and overall health care of exotic birds, preferably Ostrich. Housing provided, with a subsistence salary included. Send resume/qualifications to: Terry Spitzer, 497 Lanelle Place, Newport News, VA 23602.

**CURATOR/KEEPER**...Camp Kulaqua, a Seventh-Day Adventist Youth Camp, is seeking a very special person to assume the position of Zoo Curator for a small and varied animal collection including various species of cats, hoofstock, primates and reptiles. Keeper duties will also be performed by the curator. Supervision of a staff of 3 part-time employees will be included. The ability to work well with the public is essential as this is a Christian facility. Salary dependent upon experience. Excellent benefits. Call (904) 454-1351 or send resume to: Camp Kulaqua, Rt. #2, Box 110, High Springs, FL 32643.

The following two (2) positions are available at the Philadelphia Zoo. For either position send resume and cover letter to: Human Resources, Philadelphia Zoo, 3400 West Girard Ave., Philadelphia, PA 19104.

**ANIMAL KEEPER**...requires two years' experience or a degree and one year of experience with captive exotics and strong written and oral communication skills. This is an open relief position assigned to areas as needed. Responsible for care, feeding, health/safety of animals; exhibit maintenance; behavior observation, interaction with the public.

## **Opportunity Knocks, *Continued***

**ANIMAL RECORDS ASSISTANT**...requires degree in Biology or Zoology, one year administrative experience and knowledge of animal taxonomy, scientific nomenclature, husbandry, behavioral data collection, and animal record systems. Experience with Word Perfect 5.1 and ARKS preferred. Responsible for processing and maintenance of animal records, preparation of division reports and shipping documents and coordination of animal shipping arrangements.

The Philadelphia Zoo is offering the following for-credit internships to college juniors, seniors or graduate students majoring in life sciences or education. Internships start January 1994. To apply, send cover letter and resume no later than 15 December, 1993 to: Human Resources, Philadelphia Zoo, 3400 W. Girard Ave., Philadelphia, PA 19104.

**CHILDREN'S ZOO ASSISTANT**...assists keepers with the care and feeding of the animal collection, maintenance of exhibits and public presentations.

**ZOO NATURALIST INTERN**...provides interpretation to casual visitors through public demonstrations, programs and events. Participates in interpretative program planning, development and evaluation.

**EDUCATION INTERN**...assists in preparing and presenting lessons and developing activities and materials for students grades K through high school. Assists with the care of small animals used in the classroom.

**DIRECTOR OF EDUCATION**...at Out of Africa Wildlife Park, Fountain Hills, AZ. Position will plan, develop and carry out all animal education programs from preschool thru university level. A degree in education or biology/zoology is required and experience is preferred. Experience may substitute for formal education/degree. Applicants must be highly motivated, creative and animated in regards to their public speaking, presentation and education skills. Must be comfortable working with birds, reptiles and feline cubs. Programs done on and off site - driver's license required. Must be in good physical condition as lifting and carrying are required. Must work well with people and have ability to train others. Selling off-grounds events for a fee is part of this job, as is being flexible in ones' job duties. Cross-training provided in other departments. Other duties include, but are not limited to, writing and developing education programs for various age groups; developing and coordinating summer school/day camp program; handling birds, snakes, lizards, occasionally feline cubs etc.; enhancing profitability; school correspondence (intro and confirmation letters, group bookings, lunch coordination, reminders, newsletters, etc.) Send complete resume, samples of work, references with phone numbers to: Out of Africa Wildlife Park, P.O. Box 17928, Fountain Hills, AZ 85269-7928. Salary commensurate with experience.



## **Belinda, Star Tarantula, Dies in London**

A Red-kneed tarantula named Belinda, whose claim to fame included an appearance in the movie "Indiana Jones and The Temple of Doom", died on 19 October at the London Zoo. She was 22 years old. She arrived at the London Zoo some 15 years ago from Mexico and because of her docile nature and friendly character had been used since 1978 in the treatment of arachnophobia, or fear of spiders. After hypnosis, patients were encouraged to hold her in their hands. She weighed 45 grams and maintained her figure on a special diet of one grasshopper every three weeks. The Zoo said she had no descendents.



# AAZK Membership Application

Name \_\_\_\_\_ check here if renewal [ ]

Address \_\_\_\_\_

City \_\_\_\_\_ State/Province \_\_\_\_\_ Zip \_\_\_\_\_

## U.S. Members

- \$30.00 Professional/U.S.  
*Full-time Keepers*
- \$25.00 Affiliate/U.S.  
*Other staff & volunteers*
- \$25.00 Associate/U.S.  
*Those not connected with  
an animal facility*
- \$50.00 or up Contributing/U.S.  
*Individuals*
- \$50.00 or up Institutional/U.S.  
*Organizations/Institutions  
(requires Board approval)*

## Canadian Members

- \$35.00 Professional/Canada  
*Full-time Keepers*
- \$30.00 Affiliate/Canada  
*Other staff & volunteers*
- \$30.00 Associate/Canada  
*Those not connected with  
an animal facility*
- \$55.00 or up Contributing/Canada  
*Individuals*
- \$55.00 or up Institutional/Canada  
*Organizations/Institutions  
(requires Board approval)*

## International Members

- \$40.00 International  
*All members outside U.S. &  
Canada regardless of category*

## Library Only

- \$20.00 Library  
*Available only to  
established libraries*

Zoo Affiliation (if any) \_\_\_\_\_

Zoo Address \_\_\_\_\_

Title \_\_\_\_\_

Work Area \_\_\_\_\_

- My check is enclosed (AAZK, Inc.)  Please charge to my credit card

MASTERCARD \_\_\_\_\_ VISA \_\_\_\_\_ Card # \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_

Name on card \_\_\_\_\_ Expiration Date \_\_\_\_\_

Signature \_\_\_\_\_

Mail this application to : AAZK Administrative Offices, Topeka Zoo, 635 S.W. Gage Blvd., Topeka, KS 66606-2066 U.S.A. Make checks/money orders payable to AAZK, Inc. Must be in U.S. FUNDS ONLY.

Membership includes a subscription to *Animal Keepers' Forum*. The membership card is good for free admission to many zoos and aquariums in the U.S. and Canada.

7 HINDUSTAN ASSOCIATION  
of Zoo Keepers, Inc.  
635 S.W. Gage Blvd.  
Topeka, KS 66606-2066

Address Correction Requested



National Zoological Park 3/94  
NZP Library  
Washington , DC 20008

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TOPEKA, KS 66603

# Animal Keepers' Forum

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*Dedicated to Professional Animal Care*

December 1993

**December 1993**  
**Volume Twenty**  
**Number Twelve**

**Editor-In-Chief:** Susan Chan

**Associate Editors/Enrichment Options Coordinators:**

Kayla Grams, Topeka Zoo & Gretchen Ziegler, Wildlife Safari Park

**Book Review Coordinators:** Melba T. Brown, National Zoo and Tom Aversa, Franklin Park Zoo

**Legislative Outlook Column Coordinator:** Phyl Nilson Wojcik, John Ball Zoo

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Administrative Offices, 635 S.W. Gage Blvd., Topeka, KS 66606-2066

Barbara Manspeaker, Administrative Secretary

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Chair - Brett Sellers, Metro Washington Park Zoo

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#### Research/Grants

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#### Public Education

Chair - Elaine Puzo, Newark Museum Mini-Zoo

#### Awards

Chair - Jan McCoy, Metro Washington Park Zoo

#### Publications Funding

David Luce, Chaffe Zoological Gardens/Fresno

#### Video Tape

Type Distribution through AAZK AO, Topeka

#### Exhibit Design Resource Notebook

Michael Demlong, Phoenix Zoo

#### AAZK Chapter Logo Products

David Morrow, Wichita, KS

### MEMBERSHIP SERVICES

#### L.I.N.K. Coordinator

Mark de Denus, Assiniboine Park Zoo

#### Animal Data Transfer Form

Bernie Feldman, Burnet Park Zoo

#### Zoo University List

Mike Illig, Washington Park Zoo

#### Staff Exchange

Dale Frerking, Kansas City Zoo

#### Keeper Accommodations List

Todd Cleveland, Denver Zoo

#### AAZK Historian

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Ed Hansen, Reid Park Zoo

#### Elephant Managers Association

Ron Ringer, San Diego Zoo

#### Bowling for Rhinos

Patty Pearthree, Indianapolis Zoo

#### CAZPA Liaison

Tom Mantil, Metro Toronto Zoo

### AAZK PUBLICATIONS : CONTINUING DATA COLLECTION

Zoo Infant Development Project - Harmony Frazier, Woodland Park Zoo (Mammals)

Teri Maas/Maggie Liguori, Philadelphia Zoo (Birds/Nonpasserines); Kim Livingstone, L.A. Zoo (Passerines)

Jeanne Bocconcelli, Newark Museum Mini-Zoo (Reptiles); Linelle Lone, Denver Zoo (Amphibians)

Diet Notebook, Mammals, Vol. II - Susan Bunn Spencer, Grand Rapids, MI



# Table of Contents

|  |           |
|--|-----------|
| Scoops & Scuttlebutt.....  | 414- 415  |
| Message from the President.....  | 415       |
| Coming Events/AAZK Announces New Members.....  | 416 - 417 |
| Bowling for Rhinos Update.....   | 418 - 419 |
| Elephant Keeper Attacked at Toronto Zoo/Information Please.....  | 419       |
| 1993 Conference Proceedings Info/Order Form.....   | 420 - 421 |
| Lewa Downs/Ngare Sergei Wildlife Project Update.....   | 423 - 425 |
| Efforts to Rebuild Sapo National Park in West Africa.....  | 426 - 428 |
| Enrichment Options (Giraffe Recreational Feeding Devices).....   | 430 - 432 |
| India Makes Biggest Ever Seizure of Tiger Bones.....   | 432       |
| Legislative Outlook.....   | 434 - 436 |
| Book Reviews (The Great Bear: Contemporary Writings on the Grizzly; and<br>Black Bear: Seasons in the Wild)..... | 438       |
| Ode to Ed.....   | 439       |
| The Assisted Rearing of 0.1 Black and White Colobus.....   | 440 - 441 |
| Chapter News.....  | 442       |
| Behavioral Architecture: Designing Animal Exhibits for Animals.....  | 444 - 446 |
| Report on Hematological Parameters of the Indian Giant Flying Squirrel.....                                      | 447 - 450 |
| L.I.N.K. List of Regional Coordinators.....  | 451       |
| Opportunity Knocks.....  | 452       |

## Information for Contributors

*Animal Keepers' Forum* publishes original papers and news items of interest to the animal keeping profession. Non-members are welcome to submit articles for consideration.

Articles should be typed or hand-printed and double-spaced. All illustrations, graphs, charts and tables should be clearly marked, in final form, and should fit in a page size **no greater than 15cm x 25½cm (6" x 10")**. Literature used should be cited in the text (Brown, 1986) and alphabetically in final bibliography. Avoid footnotes. Include scientific name of species (as per ISIS) the first time it is used. Thereafter use common name. Use metric system for weights and measurements (standard equivalents may be noted in parenthesis). Use the continental dating system (day-month-year). Times should be listed as per the 24-hour clock (0800, 1630 hrs. etc.). Black and white photos **only** are accepted. Color slides should be converted to black and white prints (minimum size 3" x 5") before submission. Clearly marked captions should accompany photos. Please list photo credit.

Articles sent to *Animal Keepers' Forum* will be reviewed by the editorial staff for publication. Articles of a research or technical nature will be submitted to one or more of the zoo professionals who serve as referees for *AKE*. No commitment is made to the author, but an effort will be made to publish articles as soon as possible. Lengthy articles may be separated into monthly installments at the discretion of the editor. The editor reserves the right to edit material without consultation unless approval is requested in writing by the author. Materials submitted will not be returned unless accompanied by a stamped, self-addressed envelope. Telephone or FAX contributions of late-breaking news or last-minute insertions are accepted as space allows. However, long articles must be sent by U.S. mail. Phone is (913) 272-5821 Ext. 31. FAX (913) 273-1980.

## **DEADLINE FOR EACH EDITION IS THE 15TH OF THE PRECEDING MONTH**

Articles printed do not necessarily reflect the opinions of the  
*Animal Keepers' Forum* editorial staff or  
the American Association of Zoo Keepers, Inc.  
Publication does not indicate endorsement by the Association.

Items in this publication may be reprinted providing credit to this publication is given and a copy of the reprinted material is forwarded to the editor. Reprints of material appearing in this journal may be ordered from the editor. Back issues are available for \$2.00 each.

This month's cover features the Great Blue Heron (*Ardea herodias*) drawn by Carol Sharp of Salt Lake City, UT. The Great Blue is closely related to the common heron and occupies an ecological niche in North America. It is somewhat larger than the latter, and has a black belly and reddish-brown thighs. It builds its nests in trees where it will deposit between 3-5 eggs during the breeding season. Both male and female work at building the nest as well as in incubating the eggs and attending the altricial young after hatching. Their diet consists primarily of fish, but they also eat frogs, salamander larvae, small mammals and insects. Their long legs and necks assist their hunting in lakes and streams. Thanks, Carol!

**Scoops**

**and**

**Scuttlebutt**

### **1st Annual Mid-Atlantic Reptile Show Proceeds Raise \$17,000 for ESP**

On 25 & 26 September, the first annual Mid-Atlantic Reptile Show was held in Baltimore, MD. Sponsored by the Maryland Herpetological Society, and coordinated by Tim and Diane Hoen, the show raised \$17,000.00 in proceeds which were donated to the Ecosystem Survival Plan through the National Aquarium at Baltimore's program. The funds are being used for land purchase in the Talamanca Biological Corridor in Costa Rica. *submitted by Rosemary Krussman, National Aquarium at Baltimore.*

### **Central Florida Chapter Holds Fundraiser for AAZK, Inc.**

The Central Florida AAZK Chapter, which includes members from Sea World of Florida, Discovery Island, Central Florida Zoological Park, and Silver Springs Wildlife Park, held a fundraiser in July to benefit the National Association. Their cook-out meeting at Sea World netted a check for \$253.12 to AAZK, Inc. This is equivalent to the cost of domestic postage for one month's mailing of *Animal Keepers' Forum*. The Board of Directors and Administrative Office staff wish to thank all the members of the Central Florida Chapter for their generosity and concern for the financial welfare of the Association. Many thanks!

### **AAZK Research Grants for 1994 Available**

The American Association of Zoo Keepers, Inc. announces the availability of two \$750.00 research grants in the field of zoo biology. Interested applicants should direct their inquiries to Sue Barnard, Chairperson, AAZK Research/Grants Committee, Zoo Atlanta, Department of Herpetology, 800 Cherokee Ave., SE, Atlanta, GA 30315. The deadline for submissions is **1 March 1994**.

### **AKF Dedicated Issues Deadline Reminder**

All members are reminded that material for the special issue dedicated to Elephant Management and Husbandry are due **by 15 January 1994**. If enough material is received, we would anticipate publication of this special issue in March 1994. We also want to remind the membership to submit their suggestions for topics for other dedicated issues for 1994. We would like to do at least one other in addition to that already in the works on elephants. Please submit suggestions **by 1 February 1994**. As always, contributions of news items, articles, etc. on all topics relating to zoos and zoo keeping are welcome at any time. This is your professional journal--we want to make it meet your needs. Let us hear from you soon!

### Chapter Logo Registry Update Reminder

In August 1993, all Chapters were requested to submit a sharp, clear copy of their logo to the Administrative Offices for inclusion in the Chapter Logo Registry Update. To date we have received only five--from the Kansas City, Dallas, Beardsley, Mesker Park and Western New York Chapters. We are fairly certain that there are Chapters out there that have changed their logo since the last registry in 1991 or have only recently adopted a logo. We realize that many Chapters have submitted logos in the past, but we want to ensure that all logos in the update are **current** so we ask that all Chapters send this logo information. Also please include the name of the artist who designed the logo and the year the logo was officially adopted by the Chapter. Also, if there is a particular significance as to why the animals or design on the logo was selected, please include this information. We had hoped to put out the new Chapter Logo Registry by early '94, but since we have had such a poor response to our request, this date will have to be delayed. Please submit your information by **1 February 1994**. All Chapters will receive a copy of the updated Chapter Logo Registry upon its completion. Send to: Chapter Logo Registry, c/o AAZK, 635 SW Gage Blvd., Topeka, KS 66606-2066.



### ***Message From the President.....***

The Board of Directors received new oversight assignments at the AAZK National Conference in Atlanta. They are as follows:

|                         |  |
|-------------------------|--|
| President, Janet McCoy  | Presidential Advisors (AAZPA, CAZPA, AZAD, Elephant Managers Association, Bowling for Rhinos, Historian) |
| V. Pres., Rachel Rogers | By-laws, Ethics, National Election, Development  |
| Past Pres., Ed Hansen   | Public Education, Zoo University, Staff Exchange   |
| Mark de Denus           | Conservation, Preservation & Restoration, Conferences, Research Grants, Publications                     |
| Ellen Bradfield         | Awards, Publications Funding, Animal Data Transfer Forms   |
| Alan Baker              | Library Resources, Training Materials, USDA  |
| Ric Urban               | LINK, International Affairs, Keeper Accommodations List  |

Please contact either the Chair or Board oversight of a committee if you have any questions, comments, or suggestions. Remember, we are here to serve you, the members. We rely on your input to further the goals of the Association.

All AAZK Chapters are reminded of two items: 1) Election of new officers for Chapters is supposed to take place in December; 2) Recharter Packets will be in the mail to all Chapters in January--please be on the lookout for them and return them to AO by the 1 March 1994 deadline.

On behalf of the Board, I want to wish you and yours happy holidays and best wishes for a prosperous new year!

Janet McCoy, AAZK President  
Metro Washington Park Zoo  
Portland, OR



# Coming Events

## A Seminar of Behavior Modification Through Positive Training Techniques

February 25-26, 1994

Cincinnati, OH

Greater Cincinnati AAZK would like to invite neighboring AAZK members to our monthly meeting. Ted Turner, Curator of Training at Sea World of Ohio, will be our guest speaker. He will be discussing his training techniques and psychological principles - how we as keepers can redirect negative behavior in exotics to positive workable behavior (i.e. vomit throwing gorillas, abusive mothering and simply shifting animals by targeting).

There will be a potluck dinner at 6 P.M. and time to share any news. The lecture will follow from 7-11 p.m. There will be a more indepth full day training on Saturday from 9 a.m. until 5 p.m. The cost to AAZK members is \$25.00, Non-members \$45.00. Housing is available upon request. To make reservations for Friday and/or Saturday, please call or write Becky Jones, 541 Terrace Ave., Cincinnati, OH 45220. (H) (513) 861-6123, (W) (513) 281-4701 ext. 8349.

## The Annual Conference of the National Wildlife Rehabilitators Association

March 2-6, 1994

Wilmington, DE

Tri-State Bird Rescue and Research, Inc. will be host to the symposium which will feature speakers on rehabilitation, education, administration, etc. Major sessions will include Habitat Assessment & Reintroduction Techniques; State & Federal Permit Forum; Veterinary; Waterbirds; and Mammals. Hands-on Workshops include Radio-Telemetry Techniques, Parasitology and Hematology. Publications of all previous symposiums are also available for reference to those in the field. For more information, contact: NWRRA, 14 North 7 Avenue, St. Cloud, MN 56303 (612) 259-4086.

## International Conference on Orang-utans: The Neglected Ape

March 5-8, 1994

Fullerton, CA

An International Conference on Orang-utans: The Neglected Ape will be co-hosted by the California State University, Fullerton; the Zoological Society of San Diego; and the Atlanta/Fulton County Zoo Inc. Paper and poster presentations are scheduled for 5-7 March, in Fullerton, CA, followed by a post-conference trip to the San Diego Zoo on 8 March, with attendees participating in workshops and tours. For registration information and abstract guidelines, please contact: Norm Rosen, Dept. of Anthropology, California State University, Fullerton, CA 92634-9480, FAX: 310-798-0576.

## ARAZPA/ASZK Annual Conference

April 17-22, 1994

Darwin, NT, Australia

Joint meeting of the Australasian Regional Association of Zoo Parks and Aquaria and the Australasian Society of Zoo Keepers will be hosted by Territory Wildlife Park and Tipperary Sanctuary. For further information contact: Michelle Nuske, Conference Coordinator, Territory Wildlife Park, P.O. Box 771, Palmerston, NT 0831, Australia.

## Callitrichid Symposium

May 1, 1994

Hershey, PA

A symposium on the primate family Callitrichid will be held by the New World Primate Taxon Advisory Group preceding the 1994 Northeastern Regional AAZPA meetings. The symposium will focus on topics of husbandry, nutrition, behavior, reproduction, and field research. Poster, video, and oral presentations are invited. Deadline for submission of abstracts is **15 February 1994**. Registration fee will be \$25.00. For more information, contact Andy Baker or Beth Bahner, Philadelphia Zoo, 3400 W. Girard Ave., Philadelphia, PA 19104, (215) 243-1100, FAX: (215) 243-0219.



## Coming Events, *Continued*

### Association of Avian Veterinarians

Sept. 27 - Oct. 1, 1994

Reno, NV

The AAV has issued a Call for Papers for its 15th Conference. Special consideration will be given to papers addressing surgery, ratites, aviculture, pigeons, reports on original research, and case reports as well as topics for the technicians' portion of the conference. Materials must be original and unpublished. Deadline for receipt of manuscripts is 1 March 1994. The AAV will also be offering a day-long comprehensive program on avian surgery on 27 March, 1994 in Atlanta, GA. For further information or to request a Call for Papers application, contact the AAV Conference Office, 2121 So. Oneida St., Ste. 325, Denver, CO 80224-2552, (303) 756-8380, FAX (303) 759-8861.

### 1994 AAZPA Regional Conferences

**6-8 March 1994** - Central Regional Conference. For more information, contact Donna Chain, Oklahoma City Zoo, 2101 N.W. 50th St., Oklahoma City, OK 73111 (405) 424-3344.

**20-22 March 1994** - Southern Regional Conference. For more information, contact Beverly Rutland, Montgomery Zoo, P.O. Box ZEBRA, Montgomery, AL 36109 (205) 240-4900.

**10-12 April 1994** - Western Regional Conference. For more information, contact Jean Miller, Micke Grove Zoo, 11793 North Micke Grove Road, Lodi, CA 95240 (209) 953-8840.

**17-19 April 1994** - Great Lakes Regional Conference. For more information, contact Carol Pedersen, Blank Park Zoo, 7401 S.W. 9th St., Des Moines, IA 50315 (515) 285-4722.

**1-3 May 1994** - Northeastern Regional Conference. For more information, contact Troy Stump, ZOOAMERICA, North American Wildlife Park, 100 West Hersheypark Dr., Hershey, PA 17033 (717) 534-3862.



## **AAZK Announces New Professional/Contributing Members**

|   |  |
|---|--|
| Chris Lasher, Ross Park Zoo (NY)          | Marianne Burguiere, Philadelphia Zoo (PA)      |
| Rebecca Smithson, National Zoo (DC)       | Vicky Ann Poole, Baltimore Zoo (MD)            |
| Jami Steele, Riverbanks Zool. Prk. (SC)   | William E. Boyd, Riverbanks Zool. Prk.(SC)     |
| Teresa Skinner, Zoo Atlanta (GA)          | Keri Snodgras, Central Florida Zool. Prk. (FL) |
| LeAnn Rottman, Lowry Park Zoo (FL)        | Beverly Markwich, SFCC Teaching Zoo (FL)       |
| Christine Morabito, Discovery Island (FL) | Nicholas Ardiano, Birmingham Zoo (AL)          |
| Carol Rexer, Toledo Zoo (OH)              | Stacey Bauman, Grassmere Wildlife Prk. (TN)    |
| Kim Godby, John Ball Zoo (MI)             | Sheryl Simpson, Lincoln Park Zoo (IL)          |
| Betty Thomas, Tulsa Zoo (OK)              | Kathryn Wells, Folsom Children's Zoo (NE)      |
| Jennifer Lippold, Houston Zoo (TX)        | Holly Liappas, Tautphaus Park Zoo (ID)         |
| Christopher Willers, San Francisco, CA    | Donna Christensen, CA Living Museum (CA)       |
| Janiece Cummins, PAWS (CA)                | David Partington, Metro Toronto Zoo (ONT)      |
| Ron Anderson, Calgary Zoo (ALBT)          |  |

### **Renewing Contributing Members**

Virginia Zoological Park, Norfolk, VA  
Steve H. Taylor, Director, Cleveland Metroparks Zoo, Cleveland, OH  
John G. Shedd Aquarium, Chicago, IL  
Dickerson Park Zoo, Springfield, MO  
ZOOCHECK Canada, Toronto, Ontario, Canada



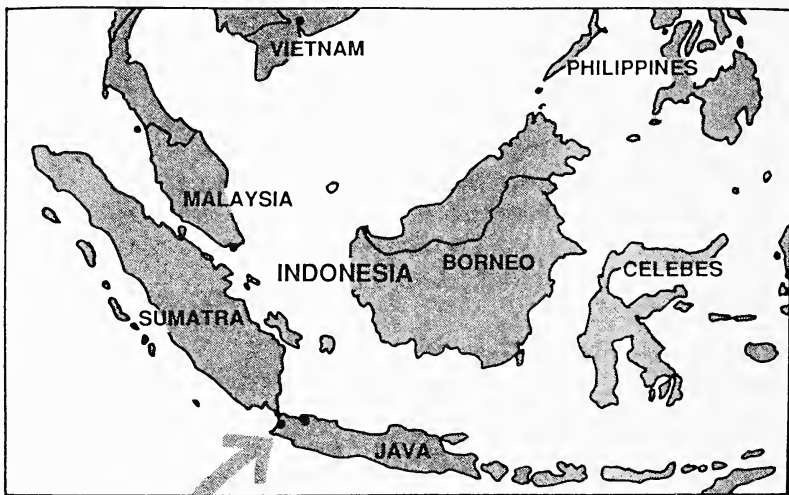
# Bowling For Rhinos Update

--submitted by BFR Coordinator Patty Pearthree  
Indianapolis Zoo, Indianapolis, IN



In addition to supporting Ngare Sergoi Sanctuary in Kenya, BFR will now support the Ujung Kulon National Park in Java! The proposal that passed at the National Conference in Atlanta allocates the first \$100,000.00 raised each year for Ngare Sergoi. Beginning in 1994, any additional money raised will now go to Ujung Kulon through the "Adopt A Park" program set up by Ron Tilson, Director of Conservation at the Minnesota Zoo. However, if a crisis should arise at Ngare Sergoi such as a forest fire, we will be able to send all our money to Ngare Sergoi that year.

Ujung Kulon is a 300 square mile National Park that is home to the last 47 Javan rhinos in the world. Its annual operating costs are \$50,000-75,000, so \$5-10,000 would go a long way in saving this ecosystem! Java is an island of Indonesia in the Asian Pacific which harbors one eighth of the world's mammal, bird, reptile, amphibian and plant species. Ujung Kulon is home to some of the rarest plants and animals on earth. Some 40 mammal species are known to inhabit the Park. In addition to the Javan rhino, the Javan gibbon, two species of leaf monkey and the Javan tree shrew are found nowhere else in the world. Other inhabitants of the Park include Flying lemurs, Banteng, Wild dog, Binturong, Asian small-clawed otter, 250 bird species, Green sea turtle, Saltwater crocodile, and more than 50 rare plant species.



*Ujung Kulon National Park*

More information about the Park will be included in this year's BFR Information Packet which should be ready this month for anyone who wants to get a jump on things. The addition of a new ecosystem gives us added incentive to exceed the \$100,000.00 each year. This year we raised \$110,000.00 for Ngare Sergoi! With Ujung Kulon, we have additional information and goals to give to anyone we solicit for money.

For anyone who would like more information on holding your own BFR Bowl-a-thon or any other information, please write:

Patty Pearthree  
c/o Bowling for Rhinos  
P.O. Box 199026  
Indianapolis, IN 46219-9026 or call (317) 322-8723

## Bowling for Rhinos Update, Cont'd

The top fundraisers and 1993 winners of the two-week trip to Ngare Sergoi are:

Richard Buthe from Philadelphia with \$5,070.00  
Kathy Konwin from Lincoln Park Zoo with \$4,960.00

The top three Chapter totals were:

Philadelphia Zoo - \$13,167.74  
Metro Washington Park (Portland) - \$12,270.21  
Lincoln Park Zoo - \$10,256.32

## Elephant Keeper Attacked at Toronto Zoo



On the morning of Sunday 7 October, 26-year-old Nick Rensink, an elephant keeper at Metro Toronto Zoo, was seriously injured when he was gored by one of the Zoo's elephants. The response by his fellow zoo keepers, security and other staff is credited with saving his life. His partner in the elephant house, Keeper Mark Bongelli, was able to step into the pen, back the elephant away from Nick and have Nick crawl partially out of the accident area. Mark then pulled Nick through the adjacent pen, past two other elephants to a central area, and called for assistance on the Zoo's communication system. A keeper from the Seal House who also has experience with the elephants was first on the scene and, according to the Zoo duty nurse, the staff took all appropriate action in applying first aid in this situation.

An inspector from the Ministry of Labour was involved in an investigation of the accident on Sunday morning and was satisfied with the existing animal care protocols that the Zoo has in place. The Zoo is continuing with its internal review of the accident.

The Zoo maintains a herd of eight African elephants, all of them female. The elephant that attacked Rensink was 25 years old. There have been no similar incidents at the Metro Toronto Zoo. The Zoo works closely in monitoring elephant husbandry through its professional associations (the Association of Zoos and Aquariums and the Elephant Managers Association). Planning is underway for arrangements to host the Elephant Managers Association Conference at the Zoo in the fall of 1994, which is one way elephant managers and keepers exchange professional information.

Professional collaboration among zoos is used to share information and protocols which guide the day to day husbandry of elephants. The Zoo's protocol for elephants does not allow a keeper to enter the elephant's pen unless there is another keeper present, as was the case on 7 October. The protocols are in place and are well understood by Zoo staff. The two keepers involved are both experienced with elephants. Mark has worked with the animals for more than five years, although he is presently assigned to the Demonstration Unit, which works with numerous species in public education demonstrations. Nick has more than 18 months experience with the Zoo's elephants.

The Metro Toronto Zoo is commending the actions of its staff in responding to this unfortunate accident and is gratified that Nick is beginning his recovery.

--from *Information Bulletin/Metro Toronto Zoo/10 November 1993* and telephone interview with Joel Peters, Director of Planning and Analysis, Metro Toronto Zoo, 15 November 1993



## Information Please

Information is required on the following two species - the European Pine Marten (*Martes martes*) and the Mississippi Alligator (*Alligator mississippiensis*). Data required on exhibit dimensions, breeding, dietary and medical details. Although other information on husbandry of either of these species would be gratefully received. Please write to: Graham Mudway c/o Welsh Mountain Zoo, Colwyn Bay, Clwyd, N. Wales LL28 5 UY, Gt. Britain.



# 1993 Conference Proceedings Order Form

If you are interested in obtaining a copy of the Proceedings containing the papers presented at the 20th National AAZK Conference held in Atlntata, GA, you will need to fill out and return the form on the opposite page no later than **10 February 1994**. All orders **must** be prepaid in U.S. Funds Only. Allow 4-6 weeks following deadline for receipt of publication. Prices are as follows:

|             |         |
|-------------|---------|
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**Note:** Individuals who presented papers at the Conference **and** submitted a manuscript for inclusion in these Proceedings will receive a gratis copy. If a manuscript was **not** submitted, a gratis copy will not be sent, and those individuals will need to order a copy.

The following papers are included in these Proceedings: Creating a Rain Forest in Seattle ~ Lowry Park and Florida Wildlife: A Commitment to Conservation and Restoration ~ Endangered Species Act Workshop ~ The Development of an Enrichment Masterplan ~ Exotic Animal Dentistry ~ The Value of Hands-On Management in the Bird Department at the Houston Zoological Gardens ~ Snake Bite Procedure Training Program ~ It's a Big World Out There (And What You, As A Zookeeper, Have To Offer It) ~ Behavioral Training of *Hylobates lar* at the Indianapolis Zoo ~ The Effects of Exhibit Expansion on the Behavior of a Mandrill Troop ~ The Captive Breeding and Management of the Blackbacked Duiker at the Memphis Zoo ~ The Captive Maintenance and Propagation of *Pongona vitticeps*, Inland Bearded Dragon ~ Aiding in the Development of Captive-born North American River Otters ~ Case History of the Hand-rearing and Reintroduction of Two Male Spectacled Langurs ~ Animal Enrichment at the Columbus Zoo ~ Don't Wait - Just Do It! ~ In Situ Conservation in the Ex Situ Community: Keepers Saving the Wild ~ Quarantine: Why is it Necessary? ~ A Nocturnal Behavioral Study of Three African Elephants at Zoo Atlanta ~ Reproductive Management of African Lions at the Topeka Zoo ~ Rhino Training ~ 1993 Bowling for Rhinos Workshop ~ Veterinary Emergency and Critical Care Medicine - CPR - for the Smaller Species of the Family Felidae ~ Update on Ngare Sergoi Rhino Sanctuary ~ Environmental Enrichment Workshop/Video Exchange.

Feel free to photocopy the form on the adjoining page to place your order.



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# Lewa Downs, Ngare Sergoi Wildlife Project Update

By *Andy Lodge, President*  
*Ngare Sergoi Support Group, Inc.*  
*Columbus, OH*

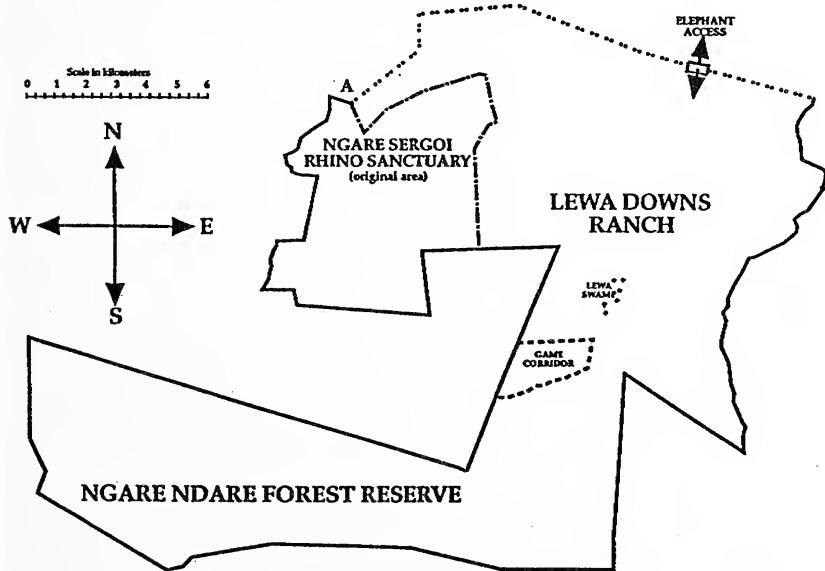


I've recently returned from Lewa Downs where I met with Anna Merz and Ian Craig. There is very bad news coming out of Zimbabwe as far as the rhino situation there. Recently 70 out of 100 dehorned white rhinos have been shot. The black rhino population has gone from 1700 to less than 300 within the past year due to poaching. Yet Zimbabwe still wants to put rhino horn on the market, and refuses to build sanctuaries to protect them.

The news is far better in Kenya where the rhino population is increasing. This increase is not huge but it certainly is an encouraging sign. This is due to projects such as Ngare Sergoi. Our black rhino population is now 16 and four more are arriving before the end of the year. The breeding program is back on track, and we are hopeful next year will be a good one.

We now have a total of 80 miles of fence, enclosing 58,000 acres. Now that the fence is in place the real work is set to begin - that of breeding and protecting the rhinos. As we have increased the protected area by almost six times over the original 10,000 acres of the reserve, the cost of protecting the wildlife has increased. I hope all of our supporters will continue to help us as many officials and conservationists feel Ngare Sergoi is the best run wildlife project in Kenya and we owe so much to the people who give their time and money so we can continue the work.

## NGARE SERGOI/LEWA DOWNS CONSERVATION PROJECT



Boundary to fence in 1992/93 .. .. .

Sanctuary fence to be removed - - - - -

Fence completed with BFR '91 & '92 funds ———

## Lewa Downs/Ngare Sergoi Update, *Cont'd*

As you know, the project has expanded and is caring for not only rhinos but many other animals that live within the confines of this fenced-in area. Below is a list of the animals found under the protection of The Lewa Downs, Ngare Sergoi Wildlife Project within its 58,000 protected acres:

Aardvark, Aarwolf, Olive baboon, Bat-eared fox, Cape buffalo, Bushbuck, Bushpig, Caracal, Cheetah, African civet, Gunther's dik-dik, Gray bush duiker, Patterson's eland, African elephant, Lesser galago, Common genet, Gerenuk, Giant rat, Reticulated giraffe, Grant's gazelle, African hare, Jackson's hartebeest, Honey badger (Ratel), Spotted hyena, Striped hyena, Rock hyrax, Tree hyrax, Impala, Blackbacked jackal, Side-striped jackal, Klipspringer, Greater kudu, Leopard, Lion, Dwarf mongoose, Marsh mongoose, Slender mongoose, White-tailed mongoose, Vervet monkey, Besia oryx, Somali ostrich, Clawless otter, Crested porcupine, Mountain reedbuck, Black rhinoceros, White rhinoceros, Serval cat, Sitatunga, Ground squirrel, Steenbuck, Warthog, Common waterbuck, Defassa waterbuck, Wild cat, Wild dog, Buchell's zebra, Grevy zebra, and Zorilla.

### The Latest Animal Count Within The Lewa Downs Conservation Project (All Animals Not Counted)

| Species              | 1977 | 1993 |
|----------------------|------|------|
| Cape Buffalo         | 60   | 170  |
| Cheetah              | 2    | 4    |
| Patterson's Eland    | 56   | 231  |
| Elephant             | 120  | 228  |
| Gerenuk              | 11   | 81   |
| Reticulated Giraffe  | 197  | 340  |
| Grant's Gazelle      | 136  | 391  |
| Jackson's Hartebeest | 25   | 58   |
| Impala               | 95   | 558  |
| Greater Kudu         | 17   | 43   |
| Leopard              | 4    | 12   |
| Lion                 | 1    | 2    |
| Besia Oryx           | 17   | 82   |
| Somali Ostrich       | 18   | 62   |
| Mountain Reedbuck    | 9    | 5    |
| Black Rhino          | 0    | 18   |
| White Rhino          | 0    | 11   |
| Sitatunga            | 0    | 11   |
| Steenbok             | 8    | 6    |
| Warthog              | 23   | 291  |
| Defassa Waterbuck    | 23   | 548  |
| Burchell's Zebra     | 254  | 1395 |
| Grevy Zebra          | 81   | 352  |

(12% OF WORLD'S REMAINING GREVY'S ARE FOUND AT LEWA DOWNS)





# Please Help !

Even though CITES (The Convention on International Trade in Endangered Species) has banned the international trade in rhino products, five countries still blatantly continue this bloody practice. The governments of these five countries - Taiwan, China, South Korea, Thailand and Yemen - turn a blind eye to this trade and it is allowed to flourish. Please help save the Rhino! Boycott products made in these countries and write letters to make your opposition to this illegal practice known.

## CHINA

Ambassador Zhu Qizhen  
2300 Connecticut Ave. NW  
Washington, DC 20008

## SOUTH KOREA

Ambassador Hong-Choo Hyun  
2320 Massachusetts Ave. NW  
Washington, DC 20008

## YEMEN

Ambassador Horsin A Alaini  
2600 Virginia Ave. NW  
Washington, DC 20037

## THAILAND

Ambassador ML Birabhongse Kasemsri  
2300 Kalorama Rd. NW  
Washington, DC 20008

## TAIWAN

Coordination Council for North American Affairs  
4201 Wisconsin Ave. NW  
Washington, DC 20016



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## *The Planet Mechanic*

Despite our best efforts to adapt our lifestyles for the better of our environment, some things - like the automobile - remain a fact of life for most of us. As much as we walk, bike or use mass transit, most families keep a car in the garage. Jeff Shumway, founder of Ecotech Autoworks, went on a cross-country tour this summer - by bike - to promote *The Planet Mechanic's Guide to Environmental Car Care*. From do-it-yourself maintenance tips to finding an environmentally conscious auto shop, the guide offers practical suggestions for making your car as environmentally friendly as possible. Shumway believes in the importance of alternative modes of travel, and his book devotes several chapters to legislating for improved gas mileage, better mass transit, and other ways to minimize the damage cars do. The 11-page paperback is available for \$6.95 plus \$3.00 for shipping. Call 1-800-325-6125 or write B&B Publications, P.O. Box 393, Fontana, WI 53125. >National Wildlife Federation EnviroAction, October 1993



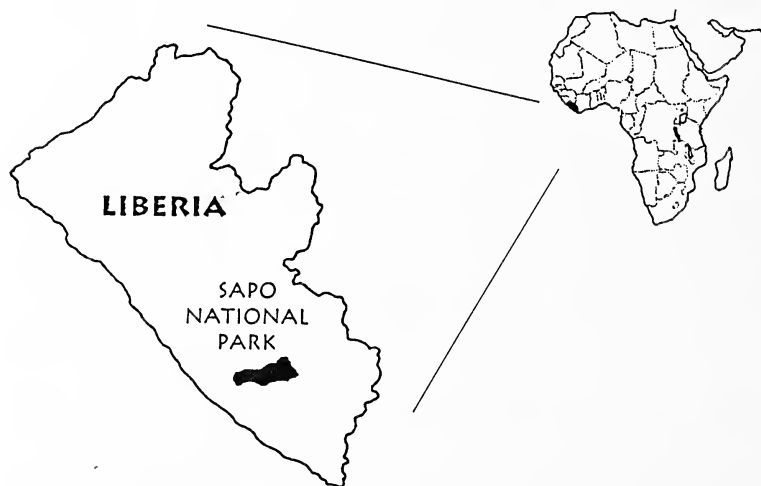
# Efforts to Rebuild Sapo National Park in West Africa

By  
Phillip T. Robinson, Director  
Office of Animal Resources  
University of California, San Diego, CA

Historically, The Republic of Liberia has been among the most heavily forested countries in West Africa. Founded in 1847, it has a land area similar to the state of Pennsylvania. Significant tracts of tropical forest remain and sustained forestry has the potential to generate long-term economic benefits to this principally agricultural society.

The Republic of Liberia has been the unfortunate setting of a civil war since 1989. The disarmament process has now begun and free elections are scheduled to be held in 1994 under U.N. supervision. While the sad toll upon human and social resources will long linger, there is no time to waste in renewing and rebuilding the country, including a program that will guide the wise management of forests and wildlife populations.

Sapo (Sah'poh) National Park is Liberia's first and only national park and was chartered in 1983. It encompasses 500 square miles of forest wilderness in the southeast region of the country, approximately five degrees north of the equator. In addition to its botanic diversity, the Park is home to a remarkable array of forest wildlife, including 12 species of primates, buffalo, elephants, pygmy hippos and leopards. Antelope species, including the Bongo, Jentink's duiker, Zebu duiker and Yellow-backed duiker are Sapo residents. The endangered White-breasted guinea fowl (*Agelastes meleagrides*) is present in this unique forest.



At the present time, no motor roads have been constructed or planned within the Park. Access is via dirt tracks that reach several perimeter villages and along the canoe-navigable western boundary, the Sinoe River, which empties into the Atlantic Ocean, 40 miles downstream.

In late 1989 open armed conflict between the government and several opposing factions ensued. By June 1990 the disorder had reached Monrovia, the capitol city, originally named after U.S. President James Monroe. Government ceased to function and public services and security deteriorated. Communication among the wildlife staff was broken



**A Liberian wildlife officer displays ivory seized from illegal killing of Forest elephants. Even young animals were poached for their incisors in these cases. (Photo by Phillip Robinson/courtesy of SRNCL)**

## Sapo National Park, *Continued*

and many Liberians began to flee the country. In several ensuing years of turmoil, two members of the wildlife staff are known to have lost their lives and several others are not yet accounted for. All the equipment, vehicles and buildings of the Division were lost.

Ironically, the amount of hunting with firearms for wildlife sharply declined during the civil war, principally because anyone carrying a weapon was regarded as a combatant. There are reports that wildlife is more commonly seen in the vicinity of the capitol city, Monrovia, due to reduced hunting pressure. From all information available, Sapo National Park, while stripped of its equipment and headquarters facilities, is fully intact.

A non-profit Society was established to plan for the redevelopment of nature conservation programs in Liberia as security and peace returns. The Society for the Renewal of Nature Conservation in Liberia (SRNCL), an extension of an existing conservation Society in Liberia, was incorporated in the U.S. in 1991. Its goals are to assist in formulating rebuilding plans and to seek financial and other support that will propel the reactivation of wildlife conservation initiatives in that country.

A five-year plan is currently being drafted and the African Wildlife Foundation (AWF), in Washington, DC, has provided office space as a base for Alex Peal, Wildlife Director before the war, to work from. He will return to Monrovia in the months prior to democratic elections to promote nature conservation strategies among the candidates. Back in Africa, an office for the Society will soon be opened in Liberia. A vital part of these efforts is to ensure that the newly constituted democracy in Liberia will incorporate sound environmental programs into the fabric of government policy.

Serious discussions have taken place with several zoos about their potential roles in reactivating Sapo National Park. An "Adopt-a-Park" concept is catching on among leading zoos, and, in the case of Sapo, the Philadelphia Zoo is the first American zoo to become a partner for the future by committing to providing a share of the annual operating funds to assure Sapo's existence.

The nature conservation Society hopes to expand the partnership concept and involve more zoological gardens, organizations and individuals directly in Liberian nature conservation. Steadily, conservation organizations are moving toward the complete integration of efforts to secure captive and wild populations of animals and their environments. Liberia has the potential to become a model for such collaborative endeavors. The Society would like to encourage the participation of AAZK chapters and members in this grass-roots effort.

Please send us your ideas and proposals for involvement. For information and a newsletter about activities designed to support nature conservation in Liberia, the Liberian nature society can be contacted at the following address: SRNCL, P.O. Box 93, Alpine, CA 91903, U.S.A. Tel: (619) 445-8172.

*Dr. Phillip Robinson first studied wildlife in Liberia in 1968 as a graduate student and is Secretary of the Board of Directors of the SRNCL. Along with Alex Peal, Head of Wildlife and National Parks there, he carried out the survey work that led to the establishments of the 500 square mile Sapo National Park, now in its tenth year of existence.*



## Information Please

I am interested in software packages made for zoo keepers, i.e. daily reports, individual animals' histories, medical records, feeding charts, etc. I would like to know how much they cost, their compatibility, how to obtain them, and if they are useful and liked. Please send information to: Marcy Miller-Lebert, Pt. Defiance Zoo and Aquarium, 5400 N. Pearl St., Tacoma, WA 98407. (Editor's note: please also send a copy of this information to AAZK AO, 635 S.W. Gage Blvd, Topeka, KS 66606). Thanks.



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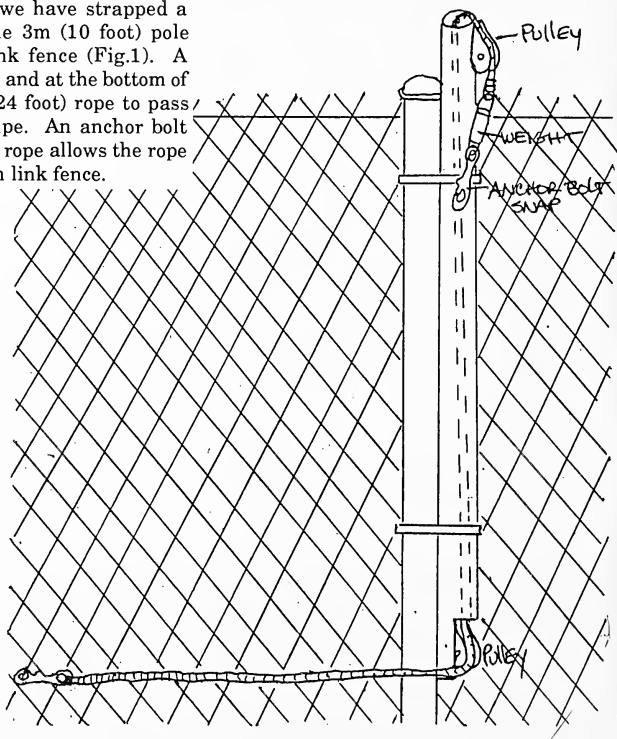
## GIRAFFE RECREATIONAL FEEDING DEVICES

In the September 1992 issue of *Animal Keepers' Forum*, I solicited ideas from *AKF* readers for a treat dispenser for recreational Giraffe (*Giraffa camelopardalis*) feedings. I would like to thank all those who responded and share some of the ideas that were particularly simple and inexpensive.

The Memphis Zoo uses a "Pole Feed" for group tours using a PVC pipe 1.3 - 1.8 cm (1/2 - 3/4") thick in 2.1 m (7 foot) lengths. A slit cut in the end of the pipe holds spinach securely. Visitors feed from across the moat. Be careful visitors do not get knocked by the pole which can be awkward. It may take a few tries before the giraffe get the hang of it.

The Topeka Zoo takes the caps off the vertical poles that support the chain link fence. Tree branches are then stuffed into the poles using rubber tie-downs to secure the browse.

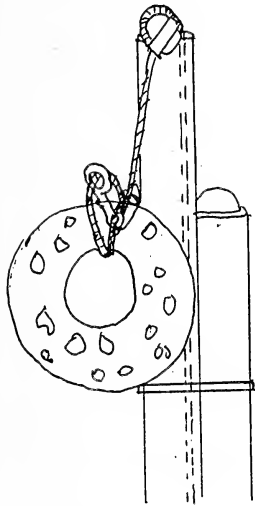
At the Sacramento Zoo we have strapped a 3.5m(11 foot) pole to the 3m (10 foot) pole supporting the chain link fence (Fig.1). A pulley attached at the top and at the bottom of the pole permits a 7 m(24 foot) rope to pass smoothly through the pipe. An anchor bolt snap at the bottom of the rope allows the rope to be secured to the chain link fence.



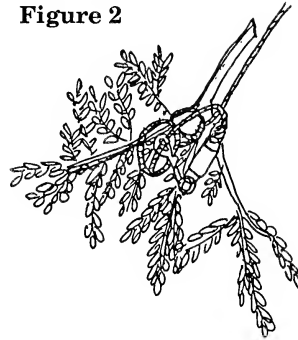
**Figure 1**

**Enrichment Options**, *continued*

A similar snap attached to a weight at the top of the rope ( to bring the rope and snap to ground level for easy food attachment) allows for browse to be hung by wrapping the rope around branches and clipping it to itself (Fig. 2). Ice rings with produce embedded can also be hung in this fashion (Fig. 3).

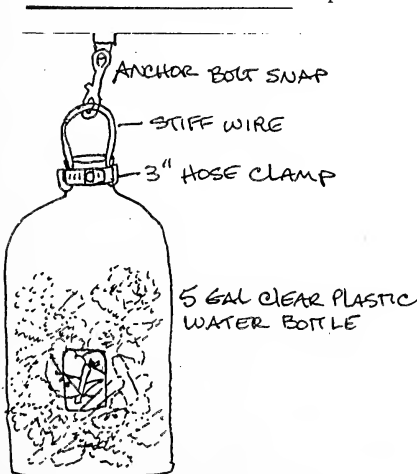


**Figure 3**



**Figure 2**

A treat dispenser was adapted from an idea submitted by Camille Dorian (Monkey Zoo, Orinda, CA) using clear plastic 12 liter (3 gal) and 19 liter (5 gal) water bottles donated by commercial water companies (Fig. 4). A hole large enough for the giraffes' tongue to remove 5 - 7.5 cm (2 - 3") pieces of produce (carrots, celery, onions etc.) is cut in the middle of one side of the bottle. The bottles' "top" is a loop of coat hanger wire secured to the neck of the bottle by a 7.5 cm (3") hose clamp. The bottles' top can be quickly attached to the weighted clip of the rope.



**Figure 4**



## Enrichment Options, *continued*

As an educational tool, visitors can watch natural "browsing" behavior at a height and the clear plastic permits a view of the giraffes' tongue at work. The giraffes enjoy the produce and occupational enrichment. Our male loves to rub on and butt his head against the empty container providing additional tactile and occupational enrichment.

The treat dispenser is easy to clean or disinfect. Pelleted feed can also be used in this container although there may be a lot of spillage depending on the size of the hole in the bottles' face.

There are a few safety considerations with this recreational feeding device. Sharp edges on the cut plastic face can be softened by covering them with duct tape. The "slack" in the rope which occurs when the weighted rope is lowered could entangle and strangle a giraffe that is allowed to play with the equipment at that time. For this reason, we always lock up our male when servicing the device. He is released only after the slack has been pulled out of the rope and it is securely clipped to the fence.

--Lee Houts, Keeper  
Sacramento Zoo, Sacramento, CA



## **INDIA MAKES BIGGEST EVER SEIZURE OF TIGER BONES**

NEW DELHI, India -- Police in India last have made the country's biggest ever tiger bone seizure following an undercover operation by WWF's wildlife trade monitoring program - Trade Records Analysis on Flora and Fauna in Commerce (TRAFFIC).

Some 283 kilos of tiger bone, destined for the Chinese medicine trade, were confiscated in New Delhi together with eight tiger skins, 60 leopard skins and 160 assorted animal skins.

The smuggling operation was uncovered by TRAFFIC India who tipped off police after setting up a bogus deal with a Tibetan trader who claimed he could produce 1,000 kilos of tiger bone within a month (representing the skeletons of up to 100 tigers).

The tiger bone was destined to go to China, via Tibet, and the skins were earmarked for Western markets (probably Eastern Europe and Russia) via Kashmiri traders in Delhi and Katmandu.

"We now know how the tiger bone trade operates in India and the trade routes have been discovered for the first time," said Ashok Kumar of TRAFFIC India.

The \$625,000 seizure underlines the crisis facing the world's dwindling tiger population estimated at between 4,400 and 7,000 animals. Last month 100 kilos of tiger bone was seized in a separate raid in Ladakh, near India's Tibetan border.

Demand for tiger bone for use in Oriental medicine, particularly in China, is behind the surge in poaching which threatens the survival of wild tigers.

"The sheer scale of these hauls is staggering when there may be as few as 4,400 tigers left in the wild," said Dr. Peter Kramer, WWF's Director of Regional Programmes. "The future looks very bleak unless demand for tiger bone can be stemmed and greater protection provided now."

Peter Jackson, Chairman of the Cat Specialist Group of the World Conservation Union (IUCN), said results of a census on India's wild tigers were due out in November with unofficial estimates putting the population as low as 2,500. "The seizure is both good and bad news," he said. "Good because it shows the authorities are now cracking down, but bad because it shows the extent of poaching."

--TRAFFIC International / GreenDisk





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2. Photographs for entry must be received by Boomer Ball® by 1 March 1994.
3. 50 individual animal winners will be chosen, and the winning institutions will be advised by 1 April 1994. (Group pictures will count as a single entry.)
4. A list of winning animals will be published in the April 1994 issues of the *Animal Keepers's Forum*.
5. Each photograph entered must have attached the following information:
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  - b. name of the animal
  - c. name and title of person submitting entry
  - d. name of institution or private facility owning the animals and the address
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  - g. brief description of reason for introducing the toy to this particular animal (increase activity, alleviate boredom, inspire group interaction, etc.)

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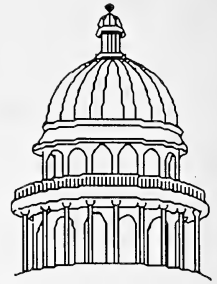
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# Legislative Outlook

Compiled by  
Phyllis Nilson-Wojcik  
Legislative Advisor



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## Wild Bird Conservation Act of 1992

The Wild Bird Conservation Act of 1992 was scheduled to reach the *Federal Register* sometime during the week of 15 November 1993, according to Karen Anderson of the U.S. Fish and Wildlife Service. The completed document, including a Fact Sheet, will be available at that time. The Fact Sheet/summary will be published in the January issue of *AKF*.

>per phone conversation with Ms. Anderson 10 November 1993

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## Proposal for Changes to Permit Regulations for Marine Mammal Protection Act

The Proposed Rule to Revise Regulations for Public Display, Scientific Research, and Enhancement Permits under the Marine Mammal Protection Act (MMPA), the Endangered Species Act (ESA) and the Fur Seal Act, was published by the National Marine Fisheries Service (NMFS). The AAZPA feels the proposal makes significant changes to the permit regulations under the MMPA and if adopted will negatively impact the management of marine mammals in zoos and aquariums. Kris Vehrs of AAZPA will be further analyzing the regulations to determine a recommended AAZPA response, and lists some of the principle issues in the proposal of interest to AAZPA as follows:

- 1) NMFS proposes to redefine the term "take" to include the captive maintenance of marine mammals so that a permit is required for holding a marine mammal and associated activities, not just for removals from the wild. NMFS states that holding a marine mammal in captivity is a "take" via restraint or detention. Contrary to existing practice, this proposal would require a permit for the holding, transport, purchase, or sale of a captive marine mammal.
- 2) NMFS is asserting that marine mammals are owned by NMFS as "public trust resources". According to the proposal, permit holders would only have custody of the animals. Further, public display permits would only be issued to a "facility". Each separate facility would be required to hold a permit. Thus, individuals would no longer be issued a permit to "take" marine mammals. Transfers of marine mammals among all facilities would require prior authorization.
- 3) NMFS is proposing a blanket permit which will authorize individuals to conduct public display activities--no individual action authorized by a permit, such as taking from the wild, transport, import or export, could be undertaken without a subsequent authorization from the NMFS. Each facility would need to anticipate all its activities so they can be included in the initial permit. Permits are valid for only five years and must be renewed. This would include notice and comment in the *Federal Register* and hearings if requested. If the permit were not renewed, a facility could lose custody of those marine mammals under NMFS jurisdiction.
- 4) NMFS asserts the authority to establish standards relating to the supervision, handling, transportation, and care and maintenance of marine mammals. NMFS will be establishing care, maintenance and transportation standards supplemental to APHIS

## Legislative Outlook, *Continued*

standards. Depending upon what is included in the concepts of supervision and handling, NMFS could also be establishing training standards.

5) The proposed regulations authorize NMFS to consider whether the program "effectively" communicates accurate information to the public and the manner of presentation of any educational program. The regulations imply NMFS will be approving the content of educational programs.

6) Each permit holder must post a surety bond of \$10,000 per animal when obtaining or transporting marine mammals which will be used to offset the costs of caring for the animal should the facility terminate operations or its permit be withdrawn.

7) Each permit holder must agree to accept and care for animals from any facility whose operations have terminated.

8) Animals may not be imported into the U.S. unless the foreign nation's marine mammal protection program is consistent with U.S. laws. Similarly, no animal may be exported from the U.S. unless the recipient complies with U.S. requirements.

9) In considering permits to "take", as that term is redefined by the proposal, NMFS would consider the impact on captive stocks. This implies NMFS has the authority to manage captive stocks as single management units.

10) The regulations generally prohibit the holding of animals in isolation unless it is justified. Facilities are generally required to maintain animals in social units which approximate those found in the wild.

11) Interactive exhibition of marine mammals is approved subject to such standards as NMFS may establish. Interactive includes a program that allows a member of the public to touch, feed, share an enclosure with, physically contact or directly interact with a captive marine mammal.

12) NMFS specifically establishes its jurisdiction over captive-born marine mammals, including "pre-act progeny".

13) There will be a twelve-month period during which all permits will be adjusted to facility permits. Multiple facility permits would be adjusted within 18 months.

> *letter dated 3 Nov. 1993 from Kris Vehrs, AAZPA*

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## **Northern Rockies Ecosystem Protection Act (NREPA) Gets Hot**

The Northern Rockies Ecosystem Protection Act (NREPA), H.R. 2638, introduced by Rep. Carolyn Maloney (D-NY), designates certain National Forest System lands and waterways (16.3 million acres) in the States of Idaho, Montana, Oregon, Washington and Wyoming as wilderness. NREPA is a visionary proposal to save the Northern Rockies Ecosystem from further fragmentation and inappropriate development. Based on the principles of Conservation Biology as embodied by the Wildlands Project, core roadless wilderness areas will be protected by buffer zones and connected together by biological corridors to allow the ecosystem to continue functioning as a whole. Many vital roadless areas that would be released to multiple use (mining, grazing and logging) in the Montana and Idaho Wilderness bills would be protected under NREPA. The bill has 29 co-sponsors, though none are from the affected states or the Northwest. Please call or write your Representative today and urge them to co-sponsor H.R. 2638.

> *Western Ancient Forest Campaign DC/GreenDisk*

## **State-sponsored Killing of Wolves to Begin in Alaska**

Despite the public furor last fall and winter over Alaska's proposal for aerial and other wolf control, state-sponsored killing of wolves will begin in Alaska sometime after October 1st. Gone is the State's temporary withdrawal from wolf control plans last winter on being faced with bad publicity nationwide and a threatened travel boycott.

Alaska's Board of Game (BOG), at its last meeting in late June in Fairbanks, adopted a policy that directs the Alaska Department of Fish and Game (ADF&G) to conduct "official" wolf control in Game Management Unit 20A, an area of over 4,000 square miles immediately south of Fairbanks. The state-supervised effort will include use of ADF&G staff and additional hired trappers to kill as many as 80 percent of the area's estimated 150-200 wolves. Spotting aircraft and other modern tracking technology will assist the hunt.

But that's not all. The BOG also reinstated a wolf killing practice known as "land and shoot trapping" statewide. Land and shoot trapping allows anyone who purchases a \$15.00 trapping license to spot wolves from the air, land, and then either walk or run at least 100 yards from the aircraft before shooting. Resumption of this practice clearly places additional pressure on wolf packs throughout the state and, partly because of enforcement difficulties, provides opportunities for violations of the Federal Airborne Hunting Act - such as shooting directly from the aircraft, herding of wolves to convenient landing sites, and simply chasing them to exhaustion.

A third element of BOG's wolf management scheme extends the regular trapping season through April, roughly an additional two weeks. Current trapping regulations allow the use of snow machines by hunters to travel into wolf habitat. Snow machine hunting has proven an extremely effective method of killing wolves, and, given that the season extension means better weather, longer daylight and an overlap with the start of bear hunting season, will continue to cause significant wolf kills. In addition, the Board has removed the protection of a previous buffer zone for land and shoot hunting around Denali National Park and Preserve. Land and shoot will now be legal right up to the border of the park and preserve. The state will still maintain a ten-mile buffer around the park for its "official" wolf control program in GMU 20A, but wolves from Denali's packs regularly stray further outside the park than that.

*>By Jim Young, with help from the Alaska Wildlife Alliance / GreenDisk ( Contact Jim Young, Sierra Club Alaska Field Office, 241 E. Fifth Ave. #205, Anchorage, AK 99501, phone: 907-276-4048. )*

### **What You Can Do.....**

- Call or write your Senators and Representatives and ask them to cosponsor Rep. Peter DeFazio's (D-OR) H.R. 1391. DeFazio's bill would amend the Federal Airborne Hunting Act to prohibit the use of aircraft for shooting animals from the air (including by state wildlife officials) unless specifically authorized by the Secretary of the Interior and a number of Congressional committees.
- Write Secretary of the Interior Bruce Babbitt and ask him to prohibit the use of aircraft, snowmachines and ATVs for hunting wolves on federal land in Alaska. Ask for Administration support of DeFazio's H.R. 1391. (Bruce Babbitt, Department of the Interior, 18th and C St. N.W., Washington, DC 20240)
- Write the Anchorage Daily News to express your concern or indignation. Letters must be 250 words or less. (LETTERS, Anchorage Daily News, P.O. Box 149001, Anchorage, AK 99514, fax: 907-258-2157).
- Write or call Alaska's Governor, Walter Hickel, to express your concerns. (Governor Walter J. Hickel, P.O. Box 110001, Juneau, AK 99811-0001, phone: 907-465-3500, fax: 907-463-3454).



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The American Association of Zoo Keepers

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# Book Review

## The Great Bear: Contemporary Writings on the Grizzly

Edited by John Murray, 1992

Alaska Northwest Books, 22026 20th Ave. SE, Bothell, WA 98021

Softback. \$14.95

*Reviews by Missy Betcher Lodge*

*Editor H.O.R.N.*

*Ngare Sergoi Support Group*

*Columbus, OH*

John Murray set out to compile the "best writings" on the grizzly published in the last forty years. What emerges in The Great Bear is a very readable, enjoyable and highly informative anthology. The 17 essays by noted naturalists, conservationists, and bear experts such as John McPhee, Doug Peacock, and Aldo Leopold are organized into four sections. These correspond to the areas still inhabited (or thought to be) by grizzlies. The texts selected range from Roger Caras' anthropomorphic "Monarch of Deadman Bay" to Frank Craighead's somewhat technical "The Bear Marion". All the essays are, to some degree, personal reminiscences of the writers' relationship with the grizzly. The respect each essayist has for the grizzly is always apparent.

A strong message runs through the book: the grizzly bear must be allowed to survive. To this end, the National Park Service has the difficult task of balancing survival of the grizzlies with park accessibility to tourists. To underscore his commitment to the grizzlies' future, Murray is donating all proceeds from The Great Bear to The Nature Conservancy's program for acquiring and preserving grizzly habitat. This is an excellent book for anyone interested in bears and the preservation of American's wilderness.

## Black Bear: Seasons in the Wild

By Tom Anderson, 1992.

Voyageur Press, Inc., P.O. Box 338,

123 North Second St., Stillwater, MA 55082

Hardback. \$29.95

The purpose of Black Bear: Seasons in the Wild is difficult to determine. Basically it puts into print and pictures one man's deep love, respect, and awe for this magnificent and engaging animal. Anderson examines black bears' life cycle and activities by season. Special sections between chapters discuss reading bear signs, what to do if you come face to face with a black bear and what lies ahead for these bears. This latter section is somewhat misleading. Aside from discussing nuisance bears in parks, the conservation message is very weak. The poaching of black bears for Asian markets merits only one paragraph.

Anderson's book is also hard to classify as to the intended audience. There is too much text to call it a coffee-table book although the color photographs, usually half page or double page spreads, are wonderful. The text itself is too basic and simplistic to term this a scientific work. Most people, even the most "wildlife ignorant", do not need an explanation that digit is a scientific word for toe.

This book is probably best suited for junior high students writing a paper on black bears. If, however, one shares Anderson's belief that black bears are fascinating and fun, the photos may make the book worth investigating.



# Ode to Ed

by Mark de Denus

Board of Directors, AAZK, Inc.

This year in Atlanta, at the National AAZK Conference, Ed Hansen concluded his term as President of AAZK, Inc. His legacy as the principle executive officer of this Association should not, and will not, be forgotten. This Association of animal care professionals and specialists has grown and evolved at an astonishing rate in the past few years given our recent status as a non-profit, tax-exempt organization. We are, now, considered a business. We are a corporation. This does not take away from our founding ideals and purposes as entrenched in our Constitution and Statement of Purpose. It only serves to assist us in pursuing and fulfilling those goals and initiatives more effectively.

Ed Hansen, as President of AAZK, Inc., has brought a fundamental attribute to the Association - business sense. During his two-year term, he never failed or compromised his efforts to uphold his belief in the interests of the organization. His record speaks for itself. From the beginning of his term, Ed identified three major areas of the Association that required his attention and responsibility - membership, organization, and policy.

Ed's basic premise that it is our Association, and the Board of Director is there to serve the desires and needs of the membership led to his philosophy and methods for steering the course and direction for AAZK.

His 'meat and potatoes' approach and no-nonsense attitude helped to mold and streamline the function and operation of this Association. By-law revision, membership services and committee review, communication policies and practices (within the Board, and with Chapters and the general membership) were all major accomplishments achieved through Ed's leadership.

His 'hands-on' approach, as demonstrated by his personal efforts in designing and writing our new Membership Brochure, as well as his attention to his important oversights (By-laws, NEC, BFR, ESP) exemplify his caring and his connection to this organization.

Ed's actions and liaison efforts, on behalf of AAZK, Inc, during the Hurricane Andrew crisis are only one example which demonstrates his abilities and qualities as a spokesperson, organizer and leader.

A Board position is not an easy undertaking; the Presidential position is inherent with workload, decisions and action, combined work stress, chaos and frustration. It is an unpaid job, it is one more responsibility on top of your regular 8-10 hours put in, daily, at the zoo and, the important and essential hours devoted to your family and personal life. There is light at the end of the tunnel and, even, glimpses of success and achievement, but it is relentless and ever-going during your term.

If there was ever a person in the right place at the right time for this Association, it is my opinion that it was Ed Hansen. His competence and confidence in leading the Association for the past two years has brought us back from the brink of financial tragedy and placed us on a firmer and more stable path with a clearer view to proceed into the future.

A tremendous amount of gratitude and thanks is owed to Ed for what he has accomplished and set into place on behalf of the Association. His attention, focus and skill will not be forgotten.



# The Assisted Rearing of 0.1 Black and White Colobus (*Colobus guereza*)

By Helen E. Harris, former Keeper  
Cheyenne Mountain Zoo, Colorado Springs, CO

This article is intended to provide a model for those who are in the position of needing to hand-rear or assist-rear the Black and white colobus (*Colobus guereza*). The raising of any primate can cause anxiety, but the anatomic specialization of colobine monkeys enhances the difficulties.

The stomach of the Colobus consists of two distinct compartments, instead of the usual one found in other primates. The alkaline forestomach ensures that any acidic content of the food is reduced before reaching the small intestine, where the risk of fermentation--so harmful to the colobus--is high.

## The Prepared Formula

The formula fed to the Colobus contained ingredients closely resembling the voluntarily selected diet of colobine monkeys. Consideration was also given to the important food groups, particularly fiber. The result:

- 1 tea bag (fruit or herbal) in 10 oz. distilled water, microwaved on high for 2 minutes.
- 90mls of this brew added to 90mls evaporated milk,
- 3/4 of a teaspoon of rice flour added, mixed thoroughly but not shaken to avoid bubbles which could cause intestinal bloating and gas.

The formula was made fresh daily, stored in an air-tight container and refrigerated.

## The Feeding

Initially, the Colobus was given 25mls of the formula, six times throughout the 24-hour period. Each bottle was warmed for 10 seconds in the microwave on high. When the Colobus reached five weeks, the amount given was increased to 35mls and the feeding times reduced to five in the 24-hours. This augmented actual formula intake, but decreased the infant's dependence on the human. At nine weeks, 40mls of formula was given at each of the five feedings. Careful observation was made on whether solid food was being taken. In an effort to expedite self-feeding of solids, the formula intake was kept at 200mls throughout the 24 hours, but feeding times were reduced to three.

## The Gregarious Nature of the Primate

The problem of socialization was posed from the outset when the decision was made to remove the infant from the group. The Colobus was six days old when the mother died and there was no other lactating female. Although one of the two remaining females of the group was interested in protecting the infant, slight bruising was sustained by the infant during the necessary netting at feeding times. At ten days old, the infant Colobus was incubated at the hospital and was receiving 150mls of formula throughout the 24-hour period. The feces was invariably soft, and ranged from yellow to tan in color. The stomach was frequently distended, but remained comfortably pliable. The greatest concern lay with its need for company.

Quite at ease with the presence of the human during feeding time, the infant became audibly agitated when returned to the incubator, and the solitary time until the next feed was causing great distress. A stuffed toy did not appear to eliminate the crying. At the age of 26 days, the baby was removed from the incubator and placed in a squeeze cage with the surrogate female who was pulled from the group. The problem was solved: the infant had a companion and was feeding well. The surrogate was given a treat whenever the infant was fed, and freely allowed the infant to come to the bottle. After finishing the formula, the infant returned to the surrogate.



## The Assisted-Rearing of 0.1 Black and White Colobus, Continued

The concern of the surrogate's own feeling of isolation was now raised. The worry was that a connection would be made between the infant and the separation from the group, thus causing the female to reject the infant. Both were put in the den adjacent to the main group, allowing the female to have a certain amount of contact with the others. The infant was now three months old, and would struggle free from the surrogate to come to the den bars to feed. This training successfully continued for six days, when the decision was made to introduce a second female from the main group to the pair in the den. This provided the surrogate with a companion and also exposed the baby to another member of the group. Both females would alternate in holding the infant, although the original surrogate female was always the more protective.

### The Reuniting of the Whole Group

The final stages of the reintroduction plan were now underway. Whenever the main group was shifted to another exhibit, the three from the den were moved to the larger area that had been vacated by the main group, in order to familiarize the infant with the permanent exhibit. All three were returned to the den for feeding when the main group was returned to the permanent exhibit. By now the infant was picking at solid food, and it was time to return the three to the main group.

The infant Colobus was fourteen months old when the group was reintroduced. She was the subject of mild interest by a few of the others in the group, but was always protected by the original surrogate female. She actively searched for solid food with them all.

### Conclusion

There was something tremendously satisfying about seeing the infant Colobus running after the others, jumping from the branches and heartily eating. We called her Wamblenica (Wom-bluh-nee-cha), the Native American word for "Orphan". Much credit for this success must go to Tracy Bennett for implementing this program, and her steadfastness and care in the first few weeks of the infant's precarious hold on life. There were times when the situation seemed daunting and hopeless to me, and Tracy's advice and wealth of knowledge was invaluable. Grateful recognition also to Michael Burton, D.V.M., and Tracey Anderson, veterinary technician.

This approach worked at the Cheyenne Mountain Zoo, but there is no rule about raising a primate: individual cases require unique judgments and immediate reactions to unusual situations. In sharing Wamblenica's story, I am hoping to help others who are faced with the task of raising a Colobus.



# Chapter News

## Greater Cincinnati AAZK Chapter

Our Chapter started in April 1993 and includes members from Paramount's Kings Island Wild Animal Habitat and the Cincinnati Zoo and Botanical Garden.

In May we had our first fundraiser. In conjunction with the Backyard Monsters Exhibit (large, robotic insects) we decided to make insect food which included brownies with dry roasted crickets and banana bread with deep fried waxworms. Each piece was sold for 50 cents and our Chapter made a profit of \$575.00.

This past summer we had a guest speaker on the Little Miami River, Inc., organization and also had a grill-out at the Wild Animal Habitat. After dinner, the park allowed us to enjoy the rides and a fireworks show. A great time was had by all!

In October our guest speaker was Dr. Bob Dahlhausen, a local veterinarian, who spoke on avian medicine. He gave an interesting and informative talk that taught about avian diseases and treatments that are available.

Even though we are a small Chapter, our members are enthusiastic and we are planning more fundraisers, and a Behavior Training Seminar this February (see notice on seminar in this month's Coming Events).

--Karen Creamer, Secretary

## San Diego AAZK Chapter

In October we had Michelle Reddy, of the San Diego Zoo Education Dept., as our guest speaker. Her topic was Hawaiian monk seals. She spent many months researching them on the Island Kure Atoll, which is the northernmost island of Hawaii. These seals are very endangered. Michelle worked with the Kure Atoll Recovery Program for Monk Seals. She had great slides as well as video clips from The Discovery Channel.

By now everyone has heard of the devastating fires we have been dealing with here in California. Unfortunately, two Zoological Society employees' homes were burnt to the ground. One was a zookeeper in our Bird Dept. who is also a breeder. Over 150 of his birds perished in the fire that swept through Escondido in the middle of the night. He managed to get his dogs, some baby birds and himself out before the wall of fire wiped out his property.

Our employees and the community have been raising money to help the fire victims get their lives going again. The response has been overwhelming. The Fire Victims Fund is taking donations through P.O. Box 551, San Diego Zoo, San Diego, CA 92112. If you're interested in helping out, checks should be made payable to Fire Victims Fund.

--Nicki McGahey, Secretary



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# Behavioral Architecture: Designing Animal Exhibits for Animals

By  
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## Introduction

The Endangered Species Act of 1973 seemed pivotal in awakening zoological parks and aquariums to the reality of dwindling wild animal populations. This legislation prodded zoos into examining and changing their husbandry techniques and their ability to sustain captive animal populations for over many generations. One area in particular that underwent significant change was the design and architecture of animal exhibits.

A literature review of zoological parks over the last 100 years shows the gradual evolution of animal enclosures from barren cages to exhibits that attempt to replicate the species' ancestral environment (commonly called naturalistic exhibits). Despite popular belief, there is a difference between animal cages and naturalistic exhibits. Whenever an in-house zoo exhibit designer or a paid zoo consultant fails to address animal needs first when designing an exhibit, they have built yet another animal "cage". However, if they consider the needs of a species (physical and behavioral), and design the exhibit to meet those needs, then they have come closer to creating a naturalistic exhibit. Yet unfortunately, even our naturalistic exhibits aren't sufficiently meeting the behavioral and biological needs of captive species.

The widespread use of "afterthought" or "add-on" behavioral enrichment devices in new animal exhibits suggests the presence of critical flaws in current exhibit design practices. Our objective for this paper is: 1) to call attention to one serious flaw - building exhibits to accommodate zoo visitors and staff rather than animals; and 2) to promote the design of biologically and behaviorally based animal exhibits.

## The Problem

Zoo exhibit designers become perplexed and disappointed when an animal demonstrates abnormal behavior (e.g., pacing) after being placed into their new multi-million dollar, state-of-the-art enclosure for the first time. From a designer's human perspective, the enclosure is innovative, aesthetic, and accommodating. But to the species housed within (the wild animal), it is yet another sterile cage, regardless of the camouflage (e.g. artificial rocks or trees). Captive animals are undoubtedly indifferent about the expensive high-tech plastic rockwork, vines, or trees often used to decorate an exhibit. They would probably be satisfied with simple piles of building blocks, deadfall, brush, and live plants. Art and money are strictly human concepts.

Like their wild conspecifics, zoo animals are instead instinctively driven to seek shelter, nest sites, mates, food resources, avoid predators and parasites, defend territories, and explore new spaces. Preventing captive animals from performing any of these behaviors results in aberrant or stereotypic alternatives, and is immoral. Or worst yet, it results in the creation of biologically dead species, wholly unsuitable for the wild reintroduction we dream of.

If an equivalent amount of money (or even fraction thereof) spent on the "theatrics" or "monument" aspect of an exhibit was spent toward meeting the biological and behavioral needs of the species, we probably wouldn't see any aberrant behaviors. An added bonus, we would be preserving the integrity of a species' "wildness" and natural history.

## Behavioral Architecture, Continued

But money is not the solution to poor quality exhibits, it's part of the problem. Building more expensive and high-tech exhibits will not solve behavioral problems, but changing attitudes and philosophies will. Exhibit designers, zoo consultants, and caregivers alike must evolve and abandon human perceptions when trying to imitate another animal's natural environment. We must always try to perceive captive environments from the animal's point of view. Otherwise, we are doomed to continue building more inadequate animal exhibits, really cages, where animals pace behind invisible bars in demeaning cells.

Shortcomings of current zoo design practices may also be due to the people filling the design positions: classical architects, draftsmen, or seasoned construction tradesmen. Too often, these people lack rudimentary animal experience or biological knowledge and, therefore, have a difficult time understanding the importance of designing exhibits to stimulate behaviors. Check the latest edition of the AAZPA Institution Directory and you'll see lots of advertisements for firms specializing in building "naturalistic" zoo and aquarium exhibits. What you won't find, but what zoos need, are individuals or businesses specializing in integrating behavioral stimulation at the concept of the exhibit's design; or at least outside resources to provide research assistance for discovering species' needs or behaviors.

Perhaps one solution to inadequate zoo exhibits is to begin encouraging (or requiring) zoo exhibit designers to acquire animal knowledge from hands-on experience or possess the motivation for obtaining species-specific information. Knowledge of a product, field or discipline shouldn't be an option, it is a prerequisite of any profession (e.g. biologist, doctor, car mechanic, saleswoman). Why then should the qualifications of exhibit designers be any different?

### Behavioral Architecture - One alternative to animal cages

The creation of quality animal exhibits are not accidents, they are the product of teamwork, innovation, dedication, and hours of thought and research. Using these qualities, we suggest a fresh approach for creating stimulating animal exhibits - an approach that begins with and builds around the exhibited animal's biological needs and known historical behaviors. We suggest calling this new approach to zoo exhibit design, **behavioral architecture**. Although the nomenclature is new, our recommendations to reevaluate exhibit design practices is not. In fact, the change was indirectly called for about 50 years ago (e.g. Heini Hediger). But the ideals are important enough to risk repetition until every institution keeping captive animals has seen "the light".

### Comparing behavioral architecture to current design practices

How does behavioral architecture differ from current zoo exhibit architecture/design practices? Current design processes are generally concerned with simulating nature for the benefit and entertainment of human visitors first, then zoo workers, followed by animals' needs. This approach causes one to forget what's important - "the story" about the species displayed within, its comfort and its safety. Every exhibit designer's goal should be to identify the species-specific behaviors and biology, then transform that information into the new exhibit.

Behavioral architecture remembers the animal's "story", its realities, its biology, its innate behaviors. Behaviors are defined here as responses to external or internal conditions; a coordination between sensory, neural, and hormonal factors. Behavioral architecture focuses on and molds the exhibit around the animal's known behavioral traits or unique evolutionary characteristics. Science will never entirely reveal all the evolutionary secrets of a species, or even which are the most important to the survival of the individual. Nor will any captive environment ever replicate the complexity of a natural habitat. Nevertheless, designers should focus on and emphasize whatever biology is known about the species when replicating nature.

### Applying behavioral architecture

Following the behavioral architecture format, one would begin a new exhibit by thoroughly researching the natural history of the organism. This might necessitate surveying every known institution keeping the particular creature. Dedicated professionals will freely share their

## Behavioral Architecture, *Continued*

successes, and more importantly, their failures in keeping wild animals in captivity. Don't overlook your own institution's curators, keepers, veterinarians, or staff biologist in your search for experts. Exhibit designers can also glean valuable information from personal conversations with field scientists researching the species in the wild or by reading their publications. Likewise, books and AAZK and AAZPA conference proceedings are valuable sources of information.

All the information gleaned from these sources should be species-specific and precise if we are to create a comfortable and stimulating captive environment. Often this requires the information to be prioritized and condensed into a feasible design. Any information that does not encourage natural behaviors or meet the biological needs of the exhibited species should be immediately discarded. For example, simply discovering that a species is "arboreal" is not enough. Is that arboreal animal a brachiator, clinger, leaper, climber, nester? What height is this animal comfortable at? Is this species arboreal for flight, cover, feeding, reproduction?

Another cornerstone of behavioral architecture is incorporating the frequency of space use and the frequency of specific behaviors into the exhibit's design. If, for example, a species is 90% terrestrial, it should be housed in a low vertical height exhibit, with instead longer horizontal distances. In other words, 90% of the exhibit should encourage terrestrial behaviors since that is the species' most prominent feature. These are a few broad examples of the depth of research and insight driving behavioral architecture.

### Some final thoughts

The upshot of this paper is short and simple: to design quality captive animal spaces, build around the behaviors and biological needs of the species. An incredibly simple and intuitive concept, yet for some reason we continue to build inadequate exhibits. But building larger and larger exhibits will not solve the problem. It's not the quantity but the quality of the space that is important - how the space meets the biological needs of the species. Quality space is just the right balance of sameness and chaos, stability and variation, security and excitement.

Quality exhibits are never finished: they are always changing, always stimulating, always unpredictable. Examples of unpredictable variation could come from gradual changes in temperature, humidity, insolation, sound, smells, feeding regimes, or exhibit furniture. An exhibit could even be divided into sections, and the animals rotated through each section periodically to prevent spatial habituation. Exhibit variation and excitement could also come from interspecific relationships with other animals and live plants.

Once again, the doctrine of behavioral architecture is not some revolutionary new concept. The seed was planted long ago, but germination continues to be suppressed by closed minds. Hopefully current exhibit design practices ("theatrical shows and monuments") will soon go the way of New Coke® and dinosaurs, since too many so-called "naturalistic" exhibits are failing to accommodate animal needs. Exhibit designers and architects should be periodically reminded that visitors come to our zoos for just a few hours, but our animal charges live and die within their captive environments.



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# Report on Hematological Parameters of the Indian Giant Flying Squirrel

(*Peturista peturista*)

By

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## Abstract

The hematological profile of seven adult male Indian giant flying squirrels (*Peturista peturista*) was carried out. The blood samples were collected in citrated vials and were subjected for hematological analysis. The total erythrocyte count was found to be  $3.43 \times 10^{12}$ /liter and leucocyte count was  $5.22 \times 10^9$ /liter. The mean erythrocyte sedimentation rate was 1.11mm in one hour and 3.14mm in 2 hours.

Key Words: Male giant flying squirrel, erythrocyte count, leucocyte count, erythrocyte sedimentation rate.

## Introduction

The Indian giant flying squirrel belongs to the subfamily Petauristinae, Family - Sciuridae and are known to be widely distributed in the North and Peninsular India, Sri Lanka and Southeast Asia. Literature on this rare species is scarce, hence an attempt has been made to analyze some of the hematological parameters of this species inhabiting in and around Kodaikanal, a hilly area in Tamilnadu, Southern India.

## Materials and Methods

All of the seven animals captured for the study were obtained from the tribals of Kodaikanal hills. The tribals hunt them in the belief that the blood of these animals cures respiratory disorders like asthma.

The erythrocyte count was determined by diluting citrated blood with Hayeins fluid (Bauer, et al 1974) at 1:200 dilution. The total leukocyte was counted using 2% acetic acid colored slightly with Gentian violet (Pacie et al, 1971) at 1:20 dilution. The erythrocyte sedimentation rates were determined employing a hematocrit tube (Wintrobe, 1933) which was held in vertical position and at a temperature of 80° F. Readings were taken at 10-minute intervals up to 60 minutes, and at 30-minute intervals up to three hours. The data were analyzed statically to test for their significant relationship as described by Sokal-Rohlf (1973).

## Results and Discussion

The erythrocyte and total leucocyte counts are given in Table 1. The mean erythrocyte and total leucocyte counts were found to be  $3.43 \times 10^{12}$ /liter (SE:0.009) and  $5.22 \times 10^9$ /liter (SE:0.009) and  $5.22 \times 10^9$ /liter (SE:0.008) respectively.

The erythrocyte sedimentation rates of the samples analyses shown in Table 2 - the Mean - erythrocyte sedimentation rate was 1.11mm for one hour and 3.14mm for two hours. The sedimentation rates for different time intervals were found to be highly significant and positively correlated (14.1639\*\*). The relationship between these two has been established with the help of a simple linear regression.

## Hematological Parameters of Indian Giant Flying Squirrels, *Cont'd*

As these values represent only those of the adult males, further comparison on the basis of sex, age and various regions needs further investigation.

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TABLE I

### ERYTHROCYTE AND TOTAL LEUCOCYTE VALUES IN THE ADULT MALE GIANT FLYING SQUIRRELS

| No.  | RBC Count<br>(in $\times 10^{12}/l$ ) | WBC Count<br>(in $\times 10^9/l$ ) |
|------|---------------------------------------|------------------------------------|
| 1    | 3.43                                  | 5.20                               |
| 2.   | 3.44                                  | 5.23                               |
| 3.   | 3.42                                  | 5.19                               |
| 4.   | 3.48                                  | 5.26                               |
| 5.   | 3.41                                  | 5.21                               |
| 6.   | 3.39                                  | 5.22                               |
| 7.   | 3.44                                  | 5.21                               |
| Mean | 3.43                                  | 5.22                               |
| SD   | 0.026                                 | 0.021                              |
| SE   | 0.009                                 | 0.008                              |



TABLE 2  
SEDIMENTATION RATE OF ERYTHROCYTES OF  
ADULT MALE GIANT FLYING SQUIRRELS

| Time (in minutes) | Mean sedimentation rate<br>(in mm) |
|-------------------|------------------------------------|
| 10                | 0.5                                |
| 20                | 0.87                               |
| 30                | 1.09                               |
| 40                | 1.11                               |
| 50                | 1.11                               |
| 60                | 1.11                               |
| 70                | 1.56                               |
| 90                | 2.04                               |
| 120               | 3.14                               |
| 180               | 4.21                               |
| Mean              | 1.68                               |

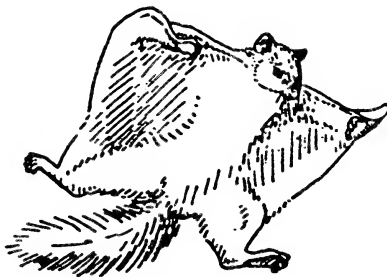
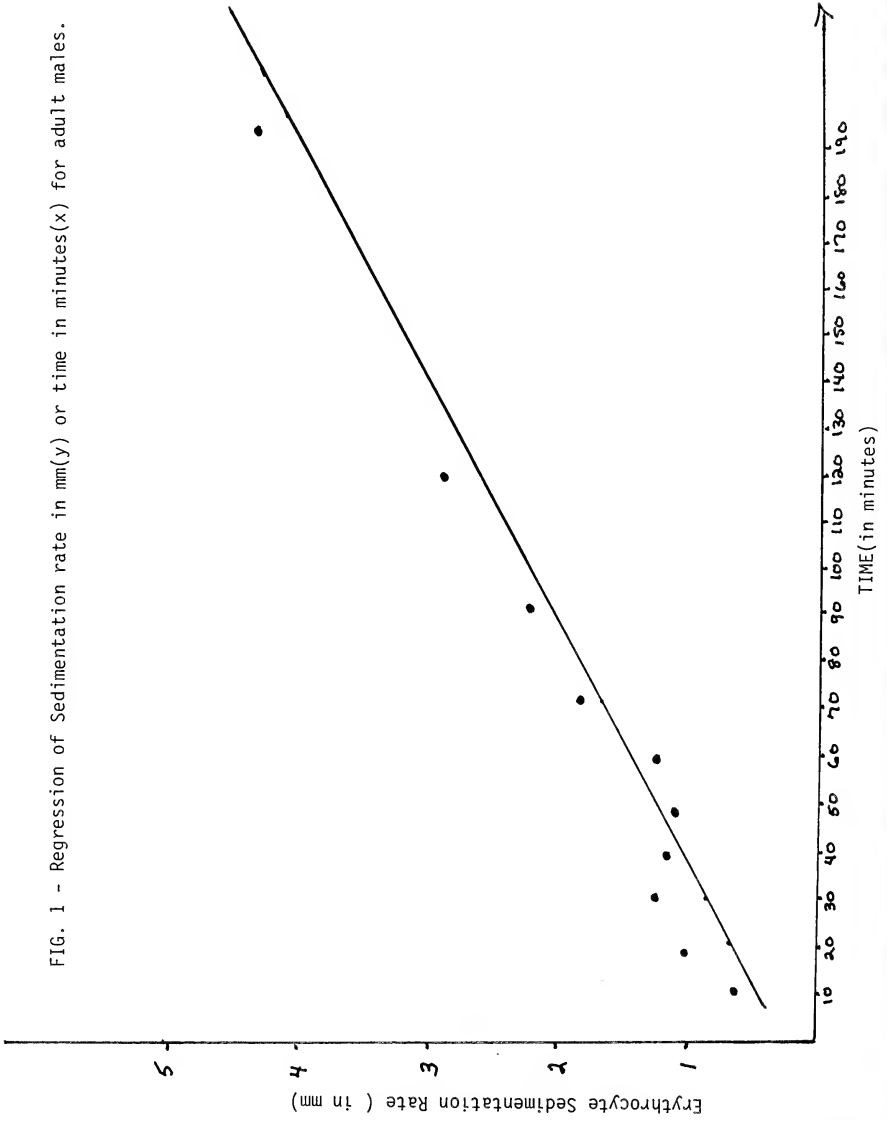


FIG. 1 - Regression of Sedimentation rate in mm(y) or time in minutes(x) for adult males.  $Y = 0.2024 + 0.0219x$



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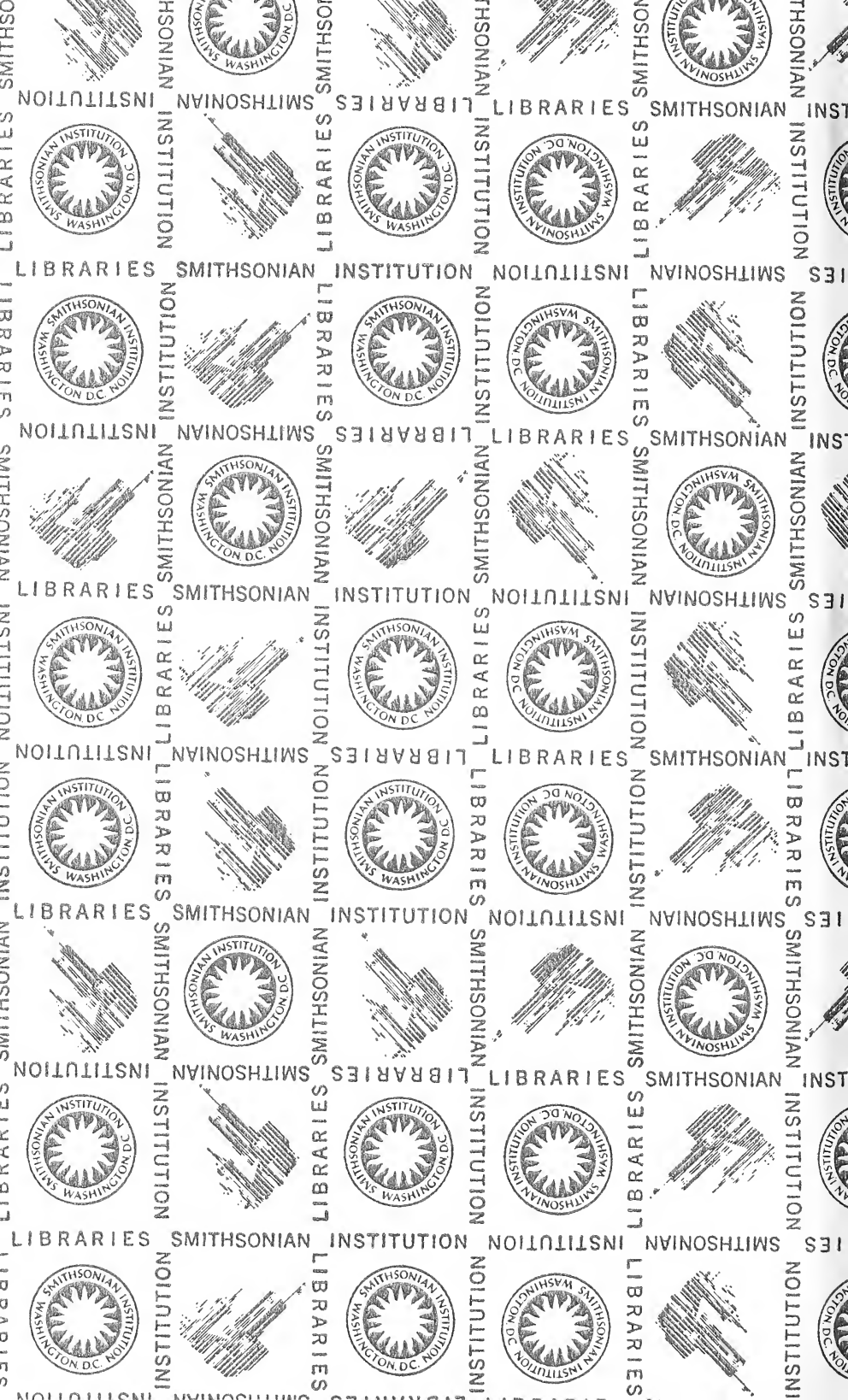


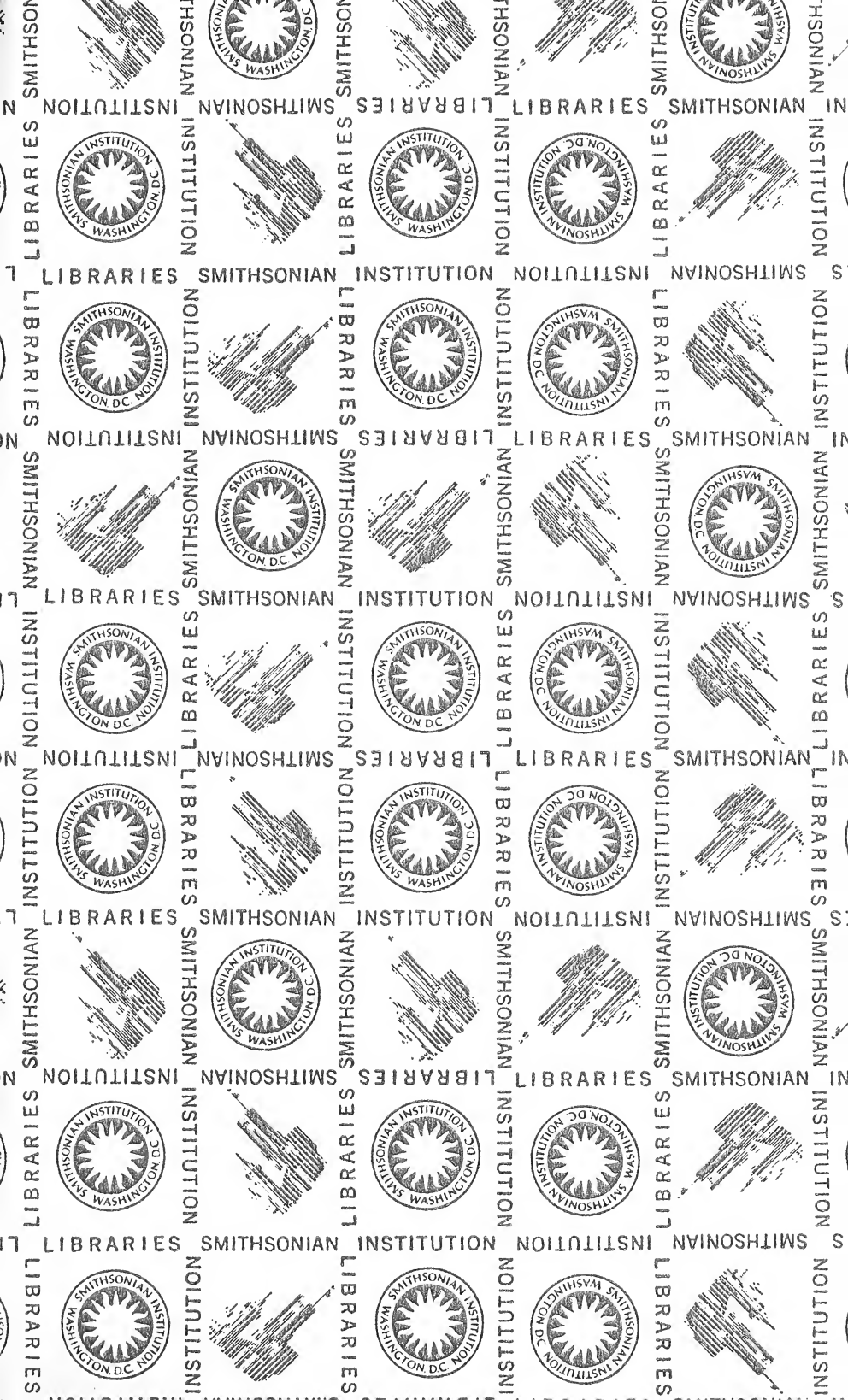












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